TROPICAL DISEASES BUREAU.

TROPICAL DISEASES BULLETIN.

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AMOEBIASIS AND DYSENTERY.

Amoebiasis.

VENDEUVRE. **L'amibiase pulmonaire pure sans abcès du foie. Traitement et guérison par l'emétine.**—*Maroc-Médical.* 1923. Aug. 15 & Sept. 15. Nos. 20 & 21. pp. 233–238; 259–263. With 3 figs. [1 ref.]

After perusal of the communication from RAMOND, DENOYELLE, and LAUTMAN (see this *Bulletin*, Vol. 20, p. 708), the author remembered having treated a similar case about a year previously, of which an account is here given :—

The patient was admitted to hospital on account of haemoptysis, together with a high remittent temperature. The sputum was muco-purulent and streaked with blood. The pulmonary signs were limited to the right lung and denoted bronchopneumonic patches, with sub-crepitous râles. The vocal fremitus was increased, the pulmonary pain was exaggerated by movement, and was referred to the intercostal spaces at the right base; the left lung appeared to be normal. The provisional diagnosis of pulmonary tuberculosis was made. The radiograph of the lungs was interesting, and showed numerous opaque patches, especially at the right base, the hilum and the apex of the right lung. There were two smaller patches on the edges of the left lung. The possibility of pulmonary amoebiasis was not at that time suspected, but emetine was given on account of the haemoptysis, and the patient made a remarkable recovery. A 10 days' course was given. The author now thinks that the broncho-pneumonic patches were caused by infiltrations with the amoeba.

The remainder of the paper is concerned mainly with a résumé of the literature on this subject, with especial reference to the differential diagnosis. There were no other original observations.

P. H. Manson-Bahr.

PANAYÒTATOU (Angélique). **L'amibiase primitive des bronches chez les enfants en Egypte.**—*Bull. Acad. Méd.* 1923. Nov. 6. Year 87. 3rd Ser. Vol. 90. No. 37. pp. 305–309.

This paper refers to the articles of PETZETAKIS [see this *Bulletin*, Vol. 21, p. 22]. The author gives details of 11 cases ranging from 2½ to 14 years of age. The sputum was mucous or blood-stained, and the amoebae, living, dead, or in cystic form, were found in every one. Four had suffered from a dysenteric attack some time previous to the bronchitic symptoms, three had dysentery and bronchitis

simultaneously, while in three others the bronchitic lesion was primary. One case had enlarged glands. The most prominent symptom was a loud and remarkably persistent cough ; on auscultation moist râles could be heard at both bases. Treatment consisted of a course of emetine lasting 13–18 days.

The sputum is infective apparently for cats : one kitten fed on sputum containing numerous cysts developed dysentery three days afterwards, and died on the 8th day. At autopsy numerous ulcers containing active amoebae were found in the intestine. Two other cats were injected intrarectally with sputum and developed dysentery on the second and third days. One died on the 15th, the other on the 16th day, with similar lesions.

P. H. M-B.

PETZETAKIS. **Bronchites amibiennes (nouveaux cas) avec présence d'amibes vivantes dans les crachats sans abcès des poumons et du foie. (2e série des observations de broncho-amibiase.)**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1923. Nov. 8. Year 39. 3rd Ser. Vol. 47. No. 31. pp. 1431–1447. With 7 figs. [3 refs.]

The author's first paper was reviewed in this *Bulletin* (Vol. 21, p. 22). He thinks that his cases of amoebic bronchitis are quite distinct from those usually described under the heading of pulmonary amoebiasis, for in the latter cases a history of dysentery or liver abscess has preceded the pulmonary symptoms, such as in those recently described by RAMOND, DENOYELLE and LAUTMAN, and also by the reviewer (*loc. cit.*, Vol. 20, p. 708 ; Vol. 21, p. 22). On this occasion he figures amoebae containing red blood corpuscles seen in the living state in the sputum. [These are only rough figures, the pseudopodia are sharp and talon-like, and in this respect differ markedly from what is usually observed in these protozoa.] To see the amoebae successfully the sputum should be examined directly it has been voided. The morphology of the organisms resembles that of *E. histolytica* more than anything else, and certain forms he thinks represent precystic individuals. When emetine treatment has been instituted the movements of the amoebae become less marked and cysts of a variable size, with 2, 3 and 4 nuclei, begin to appear. The sputum in these cases is viscid, mucous and sometimes blood-stained. It contains, besides the amoebae, large numbers of epithelioid cells and flattened epithelial cells derived from the bronchi. A certain number of the cases have a definite leucocytosis. The details of 10 cases are given. The differential diagnosis between this condition, tuberculosis, pulmonary hydatid and bronchospirochaetosis is discussed.

P. H. M-B.

PETZETAKIS. **Présence fréquente d'amibes vivantes dans les crachats et les urines au cours de la dysenterie amibienne aiguë. La " cystite amibienne."**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1923. Dec. 13. Year 39. 3rd Ser. Vol. 47. No. 36. pp. 1681–1693. [2 refs.]

The author reiterates his conviction that the amoebae found in the sputum in his cases of amoebic bronchitis are none other than *Entamoeba histolytica.* The question of antecedent dysentery has been specially investigated in the present paper. Latterly, he has

examined the sputum of 34 acute amoebic dysentery cases and at the same time, in the more urgent ones, the urine. In three cases he found amoebae both in sputum and in urine, in two in sputum alone, and in one acute cystitis with amoebae in the urine ; that is, 14 per cent. of dysenterics harbour *E. histolytica* in the sputum.

The claim is made that in these cases an initial amoebic septicaemia occurs, in fact, a generalized infection, and that the liver and lung may be invaded some considerable time before the onset of dysentery.

P. H. M-B.

DOWLING (George A.). **Amebic Infection in the State of Washington.**— *Jl. Amer. Med. Assoc.* 1923. Nov. 17. Vol. 81. No. 20. pp. 1657–1660.

Amoebic dysentery apparently exists in considerable amount in the region of Seattle (north-west coast of America). In this paper, 30 cases are recorded as recognised during a study of 13,000 patients seeking hospital treatment. 16 were in men, 14 in women. All but seven were native Americans. In seven instances the infection was contracted abroad. The primary complaint was usually indigestion or diarrhoea ; most were of long-standing infection ; the shortest history was two months.

Treatment with emetine and ipecacuanha has been discarded, as neuritic symptoms followed the former, and the patients were incompletely cured. Since changing to emetine bismuth iodide treatment no failures have been recorded. No evidence connecting the presence of Orientals with the spread of infection was secured.

P. H. M-B.

WRIGHT (Harold W.). **Chronic Intestinal Amebiasis : Clinical Aspects with Special Reference to Neuropsychiatric Manifestations.**— *Arch. of Neurol. & Psychiatry.* Chicago. 1923. Aug. Vol. 10. No. 2. pp. 226–231.

The author gives a summary in tabular form of 25 cases of mental disease associated with intestinal amoebiasis. The syndromes of the association were as follows : Neurasthenic syndrome with mental depression ; toxic syndrome with myocardial irritability simulating hyperthyroidism ; polyneuritic syndrome ; arthritic syndrome with reflex nerve pains and deposits in foramina of the vertebrae. All presented gastro-intestinal symptoms with occasional diarrhoea. Several improved after treatment by ipecacuanha, and the author thinks that he is warranted in calling attention to intestinal amoebiasis as a factor in chronic neurasthenia.

P. H. M-B.

SIMON (Sidney K.). **Intestinal Infection with *Entamoeba histolytica* as a Factor in Arthritis Deformans.**— *New Orleans Med. & Surg. Jl.* 1923. Nov. Vol. 76. No. 5. pp. 243–245. [4 refs.]

The discovery of *Entamoeba histolytica* in the necrosed bone of arthritis deformans has opened up a new conception of this disease, but the clinical correlation between arthritis and amoebic dysentery has not been generally recognized, though the association between this complication and bacillary dysentery is well known. The route

by which *E. histolytica* travels from the gut to the bone is still a matter of speculation. An account of a clinical case of arthritis deformans complicated by an intractable type of dysentery, with the presence of active *E. histolytica* in the faeces, is related. The patient has extensive rheumatoid arthritis, as well as dysenteric symptoms. A prolonged course of ipecacuanha treatment in no way improved his joint condition, but greatly relieved his dysenteric symptoms, though he still continued to pass blood and mucus.

P. H. M-B.

CANNATA (S.). **Contributo alla conoscenza dell' amebiasi nell' età infantile.** [Amoebiasis in Children.]—*Pediatria.* 1923. Nov. 15. Vol. 31. No. 22. pp. 1193–1197. [4 refs.]

Cases of amoebic dysentery continue to be reported from Italy, Sicily and Sardinia. Whether these are due to the spread of the disease by those returned from the war, or whether more thorough examination of the faeces by those who gained experience in the war, has led to the more frequent diagnosis of a condition which existed previously, it is difficult to say. In the present paper six more cases are recorded, the ages of the patients varying from 14 months to 9 years. Five of them were acute and one a chronic case. Most did well with emetine injections ($\frac{1}{2}$–1 cgm for a dose according to age) followed by emetine-bismuth-iodide. One patient proved intolerant of the latter; amaurotic symptoms appeared after six days' treatment but passed off when the drug was stopped.

H. Harold Scott.

HEYMANN (P.). [**De la valeur du pneumopéritoine dans le diagnostic des abcès du foie.**]—*Arch. d'électric. Med.* 1923. Vol. 31. pp. 358–375. [Summarized in *Méd. Sci. Abstr. & Rev.* 1924. Mar. Vol. 9. No. 6. p. 520.]

The method of pumping air into the peritoneal cavity enables abdominal viscera to be radiographed with considerably greater success than was formerly the case. It is without danger to the patient, and is especially valuable in the diagnosis of liver abscess as it renders peripheral as well as centrally-placed abscesses visible, while the dimensions and presence or absence of adhesions become discernible.

P. H. M-B.

SCALAS (Luigi). **L'intradermoreazione nella dissenterica amebica.** [The Intradermal Reaction in Amoebic Dysentery.]—*Riforma Med.* 1923. Oct. 8. Vol. 39. No. 41. pp. 967–969.

The antigen used by the author for this test is prepared as follows: 30 gm. of mucus and small fragments of intestinal mucosa from the fresh faeces of a case of acute amoebic dysentery are treated with 30 cc. of normal saline in a stoppered vessel containing glass beads and placed in a thermostat at 37° C. for a week with daily shaking. The product is then filtered, first through paper and afterwards through a Berkefeld filter connected with an exhaust pump. The filtrate is decolorized with animal charcoal and sterilized. For the test 0·25 cc. is injected intracutaneously. A positive result is shown by a swelling on a large red base, 5–6 cm. in diameter, appearing in an hour with itching

and a sense of heat but no actual pain. The signs all fade in one to three days. In negative cases there is merely an erythema, no oedema, local heat or discomfort.

Brief notes are given of 9 cases, including patients in the acute, subacute and chronic stages of amoebic dysentery, in all of whom the test proved positive ; also of 23 others, 5 healthy subjects, 7 patients suffering from non-amoebic entero-colitis, and 11 with various other diseases. All these were negative.

H. Harold Scott.

LAFONT (A.). **Formules et numérations leucocytaires aux colonies. Leur importance pour le diagnostic des suppurations profondes et particulièrement des abcès du foie.**—*Bull. Soc. Path Exot.* 1923. Nov. 14. Vol. 16. No. 9. pp. 693–701. [1 ref.]

This is a personal reminiscence, the result of 28 years spent in the tropics, of the diagnostic value of the leucocyte count. Every medical officer posted to the Colonies should make himself familiar with the technique of this simple test. The differential diagnosis between abscess and gumma of the liver may be settled by its means. The author records that in 539 autopsies performed by SEGUIN from 1897–1911, the death rate from hepatic and intestinal amoebiasis was 50 per cent.

P. H. M-B.

ACHITOUV (E.). **Amibiase chronique à forme d'entérocolite fétide ; trichomonase et spirochétose secondaires.**—*Rev. Prat. Malad. des Pays Chauds.* 1923. Dec. Year 2. Vol. 3. No. 4. pp. 275–281.

This paper is founded upon a single case of intestinal amoebiasis. In the initial stages the symptoms resembled those of appendicitis ; dysenteric symptoms appeared later, but diagnosis was rendered difficult by the scarcity of entamoebae in the faeces and the abundance of trichomonas and spirochaetes.

The stools were foetid ; the administration of anthelminthics resulted in the expulsion of 15 ascarids. The patient made a good recovery on Ravaut's paste combined with intravenous injections of 0·6 gm. salvarsan. The author believes that the amoebae were resistant to emetine, and that the ulceration of the bowel was partly due to the spirochaetes and intestinal flagellates ; hence the value of salvarsan.

P. H. M-B.

OLIVER (T. H.). **Experiences in the Treatment of Amoebic Dysentery during the War.**—*Jl. State Med.* 1924. Jan. Vol. 32. No. 1. pp. 34–37.

This paper is based on the records of 292 cases of amoebic dysentery observed at Basra. The patients on admission, after microscopic diagnosis, were given a mixture containing 3 drachms of magnesium sulphate to the ounce, and emetine daily, with a morning saline aperient, 1 grain hypodermically and ½ grain by the mouth for 12 days. 78 per cent. of cases still showed cysts in their faeces after this treatment. Allowing for error through the limited number of stool examinations, emetine *per se* must be looked upon as a total failure in eradicating the disease. The presence of complicating malaria proved a difficulty, and the task of eradicating dysentery in a patient debilitated by malaria appeared almost hopeless. The presence of mixed infections with *B. dysenteriae*, which was present in 21 cases, also complicated matters.

From statistical tables the author was led to infer that emetine treatment was more successful in the warmer weather; the failures to cure are recorded as 63 per cent. from October to March and as 22 per cent. from April to August. It is possible that the entamoeba becomes more readily formed into cysts in the cooler weather and so more resistant to emetine. The period during which emetine appeared to be most inefficient corresponded with the maximum incidence of bacillary dysentery in the months of July to September.

The combination of emetine with an intestinal antiseptic, such as salol, appeared to be advantageous. Salol 10 grains was dissolved in 3 drachms of liquid paraffin; 60–80 grains of the former drug were given daily for one week, and after this treatment of 53 uncomplicated cases of amoebic dysentery, 11·2 per cent. continued to pass cysts. Emetine bismuth iodide was given in 8 cases, and of these 6 continued to pass cysts.

P. H. M-B.

PETZETAKIS. **Avantages des injections intraveineuses d'émétine dans le traitement de la dysenterie amibienne aiguë ou chronique et des amibiases viscérales.**—*Bull. et Mém. Soc. Méd. des Hôpit de Paris.* 1924. Mar. 6. Year 40. Vol. 48. 3rd Ser. No. 8. pp. 263–270. [2 refs.]

Intravenous injections of emetine are here advocated. In chronic or moderately severe cases the following doses are employed:—

First day	0·03–0·05 gm.
Second day	0·05–0·06 ,,
Third day	*idem*
Fourth day	0·06–0·1 ,,
Fifth to seventh day	0·05–0·06 ,,
Tenth day	*idem*

or 0·35–0·45 gm. emetine within 10 days.

In serious cases slightly larger doses up to 0·6 gm. in the same period are employed. The injections are made at the bend of the elbow. The results are rapid and striking and are much superior to those of the intramuscular or subcutaneous methods usually employed. In the chronic forms and in visceral amoebiasis this method has given better results than any other and certainly prevents relapse.

In a general way the author thinks that the life history of the entamoeba in the human body is little understood and that different species are capable of producing the dysenteric syndrome. At the commencement of the disease the organisms may enter the circulation, thus necessitating intravenous treatment at this stage.

The emetine treatment of amoebiasis should be based on the same principles as obtain in visceral syphilis.

P. H. M-B.

NORMET. **Les traitements pratiques. La dysenterie amibienne.**—*Ann. de Méd. et de Pharm. Colon.* Paris. 1923. Sept.-Oct.-Nov.-Dec. Vol. 23. No. 3. pp. 338–345.

The following scheme of treatment of amoebic dysentery is proposed:—

1. Daily injection of 0·08 gm. of emetine for 5 consecutive days

2. The first or second day following this course lavage with nitrate of silver as follows :—

Silver nitrate	25 centigrammes
Tinct. opii	20 drops
Distilled water	1,000 cc.

3. During the next 5 days this lavage should be continued, but the amount of silver nitrate should be doubled.

4. On the 16th or 17th day the silver nitrate should be increased to 75 cgm. and on the 27th or 28th day to 1 gm. The lavage should enter the intestine as rapidly as possible so as to distend the gut and to bring the folds of mucosa in contact with the solution. During the course of treatment the patient should continue to take 5 gms. of sodium sulphate daily.

P. H. M-B.

GOLDSMITH (A. A.) & GREENE (E. I.) [**Chaparro Amargosa in Amebic Dysentery.**]—*Illinois Med. Jl.* Oak Park. 1923. Dec. Vol. 44. p. 437. [Summarized in *Jl. Amer. Med. Assoc.* 1924. Jan. 26. Vol. 82. No. 4. p. 334.]

All parts of this plant from the root to the berry possess a characteristic bitter taste and are credited with medicinal properties. The authors think that there are certain rebellious cases of amoebic dysentery in which chaparro amargosa should be given a trial. Six to eight ounces of the infusion are given by the mouth daily, one half hour before each meal, and rectal enemata of 500 to 2,000 cc. of the infusion injected twice daily, the patient being instructed to retain the fluid as long as possible. It is advisable to continue treatment for a week or two after the subsidence of symptoms.

P. H. M-B.

i. NELIGAN (A. R.). **The Treatment of Liver Abscess by Aspiration.** —*Lancet.* 1923. Dec. 29. pp. 1398–1399. [2 refs.]

ii. EASMON (M. C. F.). **The Treatment of Liver Abscess by Aspiration.** [Correspondence.]—*Ibid.* Dec. 15. p. 1324.

i. Referring to the paper by MANSON-BAHR, LOW, PRATT and GREGG [see this *Bulletin*, Vol. 20, p. 705], Neligan is of the opinion that aspiration of liver abscess is preferable to open operation, from the point of view of both patient and surgeon. Opening a liver abscess is as much to be avoided as opening a tuberculous abscess. Puncture may be made with, or without, local anaesthesia, and may possibly have to be repeated on a subsequent occasion without serious detriment to the patient. Should, however, the abscess be situated in the epigastric or hypochondriac regions it is safer to incise the abdominal wall, pack off the peritoneal cavity and drain. Pitting of the skin on pressure, when present, is a most important and helpful sign. A puncture should always be made near the angle of the scapula should other attempts fail. The author rarely uses general anaesthesia. If a small incision or stab is made through the skin with a tenotome the introduction of the aspirator is rendered easy ; there is no pain once the body wall has been traversed. Quinine injected into the cavity of abscesses secondarily infected with streptococci may aid recovery. Effusion of serum into the abscess cavity subsequent to aspiration may be accompanied by pyrexia, suggesting reaccumulation of pus.

Lesions of the pleura at the right base or a chronic empyema may cause difficulty in diagnosis in countries when hepatic abscess is endemic. Tenderness on pressure between the ribs occurs in both conditions, and the appearance of the aspirated pus may not always help, for hepatic pus is not invariably of anchovy colour. Abscess of the upper posterior part of the right lobe of the liver may cause displacement of the heart. Lesions of the pleura may be associated with abscess of the liver.

It is necessary to distinguish between superficial intercostal tenderness and deep-seated pain due to inflammation of the liver ; both sides of the chest are compared using equal pressure.

Three cases are quoted in which the aspiration method was eminently successful. One had an abscess of the left lobe of the liver as well as of the spleen, requiring four aspirations. In none of the three was a leucocytosis present. In two cases serum was aspirated from the cavity on the second occasion and quinine (grs. 10) thereupon injected into the cavity.

ii. As showing the practicability of the aspiration method of liver abscess a case is quoted in which the operation was performed without any local anaesthetic in the out-patient department. The patient was a native of the West Coast of Africa, in whom a tumour about the size of a small football was present in the upper part of the abdomen, causing pressure oedema of both legs. The needle of an exploring syringe was passed into the tumour, and by means of a small piece of rubber tubing connected with a metal ear syringe of 1½ oz. capacity 35 oz. of liver pus were removed in about half an hour. The patient walked home after treatment and made an uneventful recovery, emetine being injected daily for 15 days.

P. H. M-B.

CARLES (Jacques). **Peut-on traiter médicalement une hépatite amibienne ?**—*Jl. de Méd. de Bordeaux.* 1922. Jan. 10. Vol. 94. No. 1. pp. 16–17. [11 refs.]

Amoebic hepatitis must be distinguished from abscess of the liver. Three cases are recorded which do not present any exceptional symptoms, but the author points out that in the early stages the toxaemia may be so great as to resemble that of typhoid. He considers that emetine injections are specific in this condition, and, just as in the case of intestinal amoebiasis, one should pursue the emetine treatment over a prolonged period.

P. H. M-B.

CIOTOLA (Alberto). **Della cura dell' ascesso epatico amebico.**—*Policlinico.* Sez. Prat. 1923. Dec. 17. Vol. 30. No. 51. pp. 1655–1657. [15 refs.]

Case of a man, aged 26 years, who developed an abscess of the liver 3–4 years after a diarrhoeic attack. The diagnosis was based mainly on clinical grounds, X-ray examination, a leucocytosis of 18,000 per cmm., and the presence of *E. histolytica* in the faeces. 12 cgm. of emetine hydrochloride was injected beneath the skin daily. The temperature began to fall within 24 hours and by the third day was normal. In a few days all pain had disappeared and the enlargement of the liver was reduced. Twelve months later, though the organ was larger than normal, there had been no recurrence, and the patient had gained 15 kilos in weight. The

writer states that emetine in this condition is not, as a rule, given in sufficient doses, and he recommends 12 cgm. daily for 3–4 days. In such doses its action is so remarkable that "the diagnosis of amoebiasis may be definitely excluded in any case showing obscure symptoms which do not yield to emetine."

H. Harold Scott.

PERARD. **Trois cas d'abcès du foie.**—*Maroc-Médical.* 1923. July 15. No. 19. pp. 209–211.

A clinical account of three cases of liver abscess treated by operation. They presented a few novel points. In one case the differential diagnosis was between an abscess pointing on the lower surface of the liver, and duodenal or pyloric ulcer. The symptoms and the radiographic evidence were in favour of the latter diagnosis, but at operation the symptoms were found to be due to pressure of the abscess upon that portion of the intestinal tract.

P. H. M-B.

DELANOË (P.). **L'action du Stovarsol ou "composé 190" dans la dysenterie amibienne.**—*Maroc-Médical.* 1923. May 15. No. 17. p. 150. [1 ref.]

Stimulated by the work of MARCHOUX upon stovarsol in dysentery [see this *Bulletin*, Vol. 20, p. 712] the author tried the treatment upon a dysenteric case of 4 years' duration, treated with emetine and emetine bismuth iodide, and later with Ravaut's paste and novarsenobenzol in cachets (Narsenol). Although greatly benefited, he was not completely cured, but under stovarsol he lost his diarrhoea and gained weight rapidly. The course lasts 10 days, each dose consists of ·25 gram in cachet, and two are given daily.

P. H. M-B.

KESSEL (John F.). **Experimental Infection of Culture Rats and Mice with the Common Intestinal Amebae of Man.**—*Proc. Soc. Experim. Biol. & Med.* 1923. Nov. Vol. 21. No. 2. pp. 110–111.

The investigation was undertaken as a control to previous investigations on infection of rats and mice with *Endameba dysenteriae.* Five species of human intestinal amoebae, *Endameba dysenteriae, E. coli, Councilmania lafleuri, Endolimax nana,* and *Iodameba buetschlii* have been experimentally transferred to rats by feeding them on human faeces containing cysts of these amoebae, while infections of *E. dysenteriae, E. coli* and *C. lafleuri* have been transferred from one rat to another. The data suggest the possibility of rodents acting as carriers of amoebiasis.

P. H. M-B.

FRANCHINI (Filippo). **Amebiasi nella provincia di Bologna. II.—Amebiasi spontanea nel gatto concomitante ad una epidemia di dissenteria amebica nell' uomo.** [Amoebiasis of the Cat concomitant with an Epidemic of Amoebic Dysentery in Man.]—*Ann. di Med. Nav. e Colon.* 1923. Jan.–Feb. Year 29. Vol. 1. No. 1–2. pp. 1–52. With 5 plates. [Numerous refs. in foot notes.]

The writer discusses very fully the question of dysentery in cats, the characters of the amoebae present and the pathological lesions

produced by them. Five plates with a large number of photographs and drawings illustrate the paper. Instances are given of spontaneous outbreaks of dysentery in cats preceding and accompanying human outbreaks, of which the following may be quoted as an example :— In 1919 there was an extensive epidemic of amoebic dysentery among the cats of Selva, Alberino and Marmorta. There was no human case at Selva, 12 at Alberino, and some at Marmorta. In 1920 the epizootic abated at Selva and Marmorta and diminished at Alberino while the number of human cases increased. In the following year, without any further outbreak among cats, cases continued to occur in man. Of the twelve at Alberino in 1919 all but one had lived in houses where cats were ill or had died. In ten out of fifteen habitations where human cases occurred, cats had also suffered. The author argues from these facts that the cat epidemic determined and controlled that in man. [Throughout this long paper, however, no mention seems to be made relative to the passage of cysts by cats, so the causal connexion between the epidemic among them and that in man is still hypothetical.]

H. Harold Scott.

FRANCHINI (Filippo). **Esiste in Italia la dissenteria amebica ?**—*Policlinico.* Sez. Prat. 1923. Nov. 26. Vol. 30. No. 48. pp. 1556–1561. [3 refs.]

This contribution is of a polemical nature called forth by a statement of Professor CASAGRANDI that true amoebic dysentery did not exist in Italy. The author has not carried out animal experiments, but states that amoebae morphologically identical with *E. histolytica* have been seen by him in the stools of several " dysentery " cases, that the general condition cleared up on treatment with emetine, that the amoebae disappeared, and that his colleagues as well as himself have seen enlargements of the liver resolve with emetine treatment and, in one case which was submitted to operation, amoebae were found in the evacuated pus.

H. Harold Scott.

i. PANAYOTATOU (Angélique). **Quelques mots sur l'histoire de " l'Amibiase bronchique en Egypte."**—*Grèce Méd.* 1923. Oct.–Nov. Vol. 25. No. 10–11. pp. 53–55 & *Rev. Prat. Malad. des Pays Chauds.* 1924. Jan. Year 2. Vol. 3. No. 5. pp. 361–367.

—— **Sur " l'amibiase bronchique." L'amibiase primitive des bronches chez les enfants en Egypte.**—*Rev. Méd. et Hyg. Trop.* 1924. Feb. Vol. 16. No. 2. pp. 33–50.

ii. MOULINIER (René). **Médiastinite chronique, séquelle d'hepatite dysenterique. Nouveau cas.**—*Gaz. hebd. des Sciences Méd. de Bordeaux.* 1923. Nov. 18. Vol. 44. No. 46. pp. 583–584. With 1 fig. [1 ref.]

iii. LEONARD (T. M. R.). **A case of Acute Hepatic Abscess—Amoebic : cured by Emetine without Operative Aid.**—*Nigeria Ann. Med & San. Rep. for the Year 1922.* pp. 27–28.

iv. PICCOLI (Giovanni). **Contributo allo studio dell' ascesso dissenterico del fegato.** [Amoebic Abscess of the Liver.]—*Giorn. de Med. Milit.* 1923. Dec. 1. Vol. 71. No. 12. pp. 621–630. [22 refs.]

v. THURSTON (E. Owen). **Treatment of Liver Abscess by Aspiration**—[Correspondence.]—*Lancet.* 1924. Mar. 1. p. 465.

i. Contributions on amoebic bronchitis as seen in Egypt ; no new information.

ii. The clinical record of a case of mediastinitis thought to be secondary to amoebic hepatitis. No amoebae were found.

iii. A simple case of acute amoebic hepatitis which rapidly yielded to the administration of emetine, a total of 28 grs. The patient had malaria also.

iv. A general account of this condition with brief notes of four cases, all of which were treated surgically. The paper contains nothing new.

v. Thurston believes that the results of aspiration combined with emetine therapy are immeasurably superior to the old open operation and proposes to publish a further series of 63 cases.

P. H. M-B.

Bacillary Dysentery.

Bamforth (J.) **A Small Outbreak of Dysentery associated with an Unusual Bacillus.**—*Proc. Roy. Soc. Med.* (Sect. Trop. Dis. & Parasit.). 1924. Feb. Vol. 17. No. 4. pp. 25–29. [5 refs.] and *Jl. of Hyg.* 1924. Mar. Vol. 22. No. 3. pp. 343–347. [5 refs.]

A record of six cases of dysentery occurring in an institution in England in January 1923. The symptoms were clinically those of bacillary dysentery. The specimens of faeces collected from four cases yielded an almost pure culture of an organism which was definitely and specifically agglutinated by the blood serum of the cases. In its reactions the organism appears to conform with the paradysentery bacillus described by Mita. (See this *Bulletin*, Vol. 19, p. 335.)

It closely resembles also the organism described by Sonne, considered to be the most frequent cause of dysentery in Scandinavia. The author thinks that a further investigation of cases of diarrhoea and dysentery occurring in this country will yield strains of this organism.

P. H. M-B.

Laurinsich (A.) **Sulle siero-agglutinazioni nelle sindromi dissenteriformi della prima infanzia.** [Agglutination in the "Dysenteries" of Early Infancy.]—*Pediatria.* 1924. Mar. 15. Vol. 32. No. 6. pp. 331–345. [49 refs.]

With a view to shedding light on the actual causes of summer diarrhoea and dysenteric symptoms in infants the author tested the agglutinating power of the serum of patients on organisms isolated from the faeces. Seeing that over a hundred sera were tested, each on ten or more organisms, the amount of work must have been enormous, and it is greatly to be regretted that the results obtained are so incommensurate with the time and trouble spent. It is difficult in some instances to reconcile the statements in the tables with the explanations in the letterpress. Thus, in Table I the bacteriological diagnosis is stated to be "Shiga-Kruse infection," but one serum agglutinated Flexner's bacillus in a dilution of 1 : 100 and was negative to Shiga. Again, in Table V the diagnosis is "Gaertner's bacillus," but only one out of four sera agglutinated that organism, with a serum in dilution 1 : 100, and that same serum agglutinated Hiss's bacillus in 1 : 400. This anomaly is explained by saying that the group agglutinins exceeded the specific, but in three of the four in this table there appear to have been no specific agglutinins for Gaertner's bacillus and in one of them no agglutination at all of any of the 11 organisms experimented upon. In a great majority of cases the serum agglutinated more than one; this is ascribed as possibly due to some previous infection. The author concludes that at present it is not certain that dysenteric organisms always provoke the formation of specific agglutinins, at all events in sufficient strength to warrant a diagnosis on these grounds.

H. Harold Scott.

LAURINSICH (A.) **Richerche sull' etiologia delle sindromi dissenteriformi nel lattante.** [The Etiology of "Dysentery" in Sucklings.] —*Pediatria.* 1924. Jan. 1. Vol. 32. No. 1. pp. 34–43. [34 refs.]

There has for a long time been a tendency to ascribe all abnormal conditions of the alimentary tract in young children to errors of nutrition, but cases undoubtedly occur of infants at the breast suffering from symptoms of a dysenteric character, though usually more benign and of shorter course than dysentery in older children.

The author has studied bacteriologically the faeces of 52 infants suffering from dysenteric symptoms—loose stools with mucus and blood. Specimens were examined as soon as possible after they were passed. Thirty-two of the patients were on a mixed breast and artificial feeding, 20 on the latter only. Strange to say, more cases occurred amongst the former. From 17 no special organism was isolated, merely staphylococci, streptococci, or some form of *B. proteus*; from 3 *B. paratyphosus* B; 3 cases were ascribed to *B. coli*, in two of which the organism was haemolytic. In 35 instances one or other of the dysenteric group of organisms was isolated, namely Hiss-Russell (Y) in 16, Flexner in 8, Strong in 7, Shiga-Kruse in 3, Gaertner in 1. It is worthy of special note that the variety of the bacillus isolated appeared to bear no regular relation to the severity of the clinical condition; for example, a patient might be seriously ill although the organism obtained was one generally regarded as non-toxic.

H. Harold Scott.

PONS (R.). **Note sur un coccobacille constituant la flore dominante de diarrhées infantiles considérées comme dysentériques.**—*Bull. Soc. Path. Exot.* 1923. Dec. 12. Vol. 16. No. 10. pp. 708–710.

The close of the rainy season in Saigon is marked by a recrudescence of intestinal diseases, in particular bacillary dysentery. The majority of cases did not exhibit toxic symptoms and rapidly recovered, but others soon developed a typhoidal aspect and succumbed. In most cases in infants dysentery bacilli of recognised types were isolated, but in certain instances a Gram-negative organism was detected, a short non-motile cocco-bacillus generally occurring in characteristic clumps in the faeces, but forming chains on culture. On solid media it behaves as a facultative anaerobe and on gelatin it forms circular smooth colonies. Inert on solutions of the majority of sugars it ferments glucose with great difficulty. It is extremely pathogenic to guineapigs; 1 cc. of a culture emulsion kills them in 24 hours, while rabbits, rats and mice are likewise susceptible. In many of its characteristics it resembles organisms of the Pasteurella group.

P. H. M-B.

SEKI (Tadahide). **Ueber einen eigenartigen Ruhrerreger.** [A Peculiar Dysenteric Organism.]—*Cent. f. Bakt.* 1. Abt. Orig. 1923. Oct. 31. Vol. 91. No. 2. pp. 101–102.

This paper is founded upon a study, undertaken in 1913, of 12 cases of dysentery, three of which were fatal. An organism was obtained from the stools of all, and agglutinated by their serum in a dilution of 1 in 60. It was actively motile and in its cultural reactions resembled

paratyphoid B. Indol was produced. The strain was highly pathogenic to guineapigs, rabbits and mice, and produced in them dysenteric symptoms.

P. H. M-B.

HARJAS RAI. **Dysentery Carriers among the Hill Villages in the Neighbourhood of Kasauli (N.W. Himalayas).**—*Indian Jl. Med. Res.* 1924. Jan. Vol. 11. No. 3. pp. 943–945.

Using the technique advocated by F. P. MACKIE, the author isolated dysentery bacilli in 5·4 per cent. of 201 specimens of faeces from different villages, the majority being Flexner-Y strains.

P. H. M-B.

KNORR (Max.). **Die Katalasereaktion zur sofortigen Unterscheidung von echter und Pseudoruhr.** [Use of the Catalase Reaction for the Prompt Differentiation of True and Pseudo Dysentery.]—*Muench. Med. Woch.* 1923. Nov. 16. Vol. 70. No. 46. pp. 1381–1382.

This paper describes a new method of differentiating the true Shiga dysentery bacilli from the pseudo-dysentery organisms. It is known as the Catalase reaction, and is due to the formation of hydrogen peroxide by the oxygen given off by the ferments during their formation on culture; for instance, living cultures when placed in 2–3 per cent. solution of hydrogen peroxide cause great frothiness of the solution. The technique consists of half filling two capillary test tubes, 4 cm. long by 2 mm. broad, with 2 per cent. hydrogen peroxide. A small amount of the dysentery culture is removed on a platinum rod and placed in the solution. The second tube is inoculated with a culture which is known to give a definite Catalase reaction, as for instance *B. pyocyaneus*. The pseudo-dysentery cultures invariably produce a marked frothiness of the medium, which the Shiga-Kruse bacillus does not do. The author has compared 7 true dysentery strains with 19 pseudo-dysentery strains, and gives the result in a table. This reaction is more certain than the fermentation of mannite, a substance which the Shiga-Kruse never ferments, but which most of the pseudo-dysentery bacilli do.

P. H. M-B.

KECK (Albert). **Die Katalasereaktion bei Ruhrbazillen**—*Muench. Med. Woch.* 1924. Feb. 29. Vol. 71. No. 9. pp. 272–273.

KNORR having stated that the catalase reaction is given by pseudo-dysentery organisms, but not by well-established typical strains, the author repeated his experiments, but did not succeed entirely in confirming his results.

P. H. M-B.

KUNDRATITZ (Nelly). **Ueber Stomatitis ulcerosa cachectica als Komplikation bei bazillärer Ruhr.** [Ulcerative Stomatitis complicating Bacillary Dysentery.]—*Monatsschr. f. Kinderheilk.* 1921. Vol. 21. pp. 366–373. [14 refs.]

In this Viennese Hospital 77 children were treated for bacillary dysentery in 1919, and 53 in 1920. The case mortality in the former year was 9 per cent. and in the latter 10. Serum treatment was the

rule. The febrile period in the severe cases lasted as long as three weeks. Convalescence was marked by alternate constipation and diarrhoea. Relapses were rarely observed. Attention is drawn to an hitherto undescribed complication of bacillary dysentery, *i.e.*, severe ulcerative stomatitis with accompanying necrosis of the alveolus. It was thought at first to be identical with noma. Two such cases are described, one of which died. The condition was treated by painting with methylene blue and by mouth washes. Bacteriological examination showed no distinctive organisms in the necrotic tissue.

P. H. M-B.

Walko (Karl). **Ueber die Spätfolgen der Ruhr.** [The Sequelae of Dysentery.]—*Med. Klin.* 1923. Oct. 7. Vol. 19. No. 40. pp. 1319–1323. [45 refs.]

As a result of the number of carriers of dysentery bacilli who returned home at the end of the war small epidemics of dysentery have arisen all over the country; for instance, in one small town in Bohemia there were 240 patients, with a death-rate of 26 per cent., for the most part children. The author does not believe in healthy carriers of dysentery; those he has seen on more minute examination exhibit symptoms of intestinal disturbance with occasional diarrhoea. The gastric analyses of 27 such cases showed that 15 were suffering from disordered secretion of hydrochloric acid; hyperacidity is quite common. Sigmoidoscopic examination of 167 cases with a history of dysentery showed that after one year 19 per cent., after 2 years 12 per cent., after 3 years 8 per cent., and thereafter 4–7 per cent. had unhealed lesions. One of the most marked sequelae is an abnormal susceptibility of the intestinal canal to disturbances of all kinds. Affections of the large gut were noted, such as chronic colitis, and even the form known as colitis haemorrhagica. The author thinks that gastric and duodenal ulcers may also result, and he has found them 11 times in 120 cases investigated.

P. H. M-B.

Bornhagen (Hanna). **Ruhrbehandlung mit Karenz und parenteralen Infusionen von physiologischer Kochsalzlösung und Normosal.** [Treatment of Dysentery by Starvation and Parenteral Infusions of Physiological Serum.]—*Med. Klin.* 1923. Oct. 21. Vol. 19. No. 42. pp. 1395–1398. [3 refs.]

Twenty patients with bacillary dysentery were treated with parenteral injections, a litre or less, of "normosal," a mixture of inorganic salts which as far as possible represents human serum. Fifteen recovered, including all who were treated in the first week of the infection. Many of the cases were severe.

P. H. M-B.

Schönfelder (Trygve). **Sérum antidysentérique coagulé, résiduel et purifié.**—*Ann. Inst. Pasteur.* 1923. Nov. Vol. 37. No. 11. pp. 941–942.

Antidysenteric serum prepared with cultures of Shiga's bacillus can be titrated with great precision, and for this purpose rabbits and mice serve excellently. The author has worked almost entirely with white mice, injecting them subcutaneously with serum and on the following

day inoculating them intraperitoneally with the virus. This is made from twenty-four hour old cultures emulsified in physiological saline. In one series of experiments the mice were given a lethal dose of virus, representing 0·3 cc. of a culture-emulsion diluted ten times. In another series the virus was five times stronger or 1·5 cc. of the same emulsion. The quantity of serum varied from 0·0002 to 0·5 cc. and in order to establish a standard for comparison an endeavour has been made to ascertain the minimal quantity necessary to protect the animal against one or five lethal doses of living organisms.

The antidysenteric serum employed has been of five kinds, the ordinary commercial serum, desiccated commercial serum diluted ten times, a serum coagulated at 58° C. diluted ten times, purified serum, and "residual" serum washed in physiological serum and diluted to the same degree.

In the first series the inoculated virus represented a single lethal dose, and the amount of serum necessary is given as follows :—

(*a*)	Liquid serum	0·005 cc.
(*b*)	Desiccated serum	0·005 cc.
(*c*)	Coagulated serum ..	0·005 cc.
(*d*)	Purified serum	0·01 cc.
(*e*)	Residual serum	0·05 cc.

In the second series the inoculated virus represented five lethal doses, and the following doses of serum were necessary :—

(*a*)	Liquid serum	0·00625 cc.
(*b*)	Desiccated serum	0·00625 cc.
(*c*)	Coagulated serum ..	0·025 cc.
(*d*)	Purified serum	0·012 cc.
(*e*)	Residual serum	0·4 did not prevent death.

The conclusion is that antidysenteric serum coagulated at 58° C. is almost as effective in its prophylactic properties as it is in the liquid form.

P. H. M-B.

Lucchini (Carlo). [**Exotoxine et endotoxine dysentérique (Études sur l'intestin isolé).**]—*L'Igiene Moderna.* 1923. June. Vol. 16. No. 6. p. 301. [Summarized in *Bull. Office Internat. d'Hyg. Publique.* 1923. Oct. Vol. 15. No. 10. p. 1359.]

The exotoxin of the Shiga-Kruse bacillus possesses not only a generalized, but also a specific toxic action, upon the isolated loop of rabbit's intestine. Even in great dilution it causes an augmentation in the tone and the rhythmic movements ; whereas in stronger doses it causes a total arrest of all contractions. The most interesting of all the observations is the production of anti-peristaltic movements, produced even with a toxin which has been heated to 75° C. for an hour. On the other hand, the dysenteric endotoxin has no action whatever upon the isolated intestine.

P. H. M-B.

Sakauchi (Enji). [**On the Specificity of Decomposition of Sugar by Bacillus Dysenteriae : Biological Study of Bacillus Dysenteriae. I. Part.**]—*Keio Igaku (Kei-O Med. Jl.).* 1923. Mar. Vol. 3. No. 3. [Summarized in *Japan Med. World.* Tokyo. 1923. Nov. 15. Vol. 3. No. 11. pp. 249–250.]

The author endeavoured to mutate the fermentation process of various strains of *B. dysenteriae.* He obtained a "saccharolytic"

strain from a "Y" culture by cultivation for 40 days in a medium containing 1·5 per cent. saccharose. It acquired in addition the power of decomposing maltose and dextrin. The strains retained their immunological properties.

P. H. M-B.

Wollman (E.) **Recherches sur le phénomène de d'Herelle. Action de la trypsine sur le bactériophage du bacille de Shiga.**—*C. R. Soc. Biol.* 1924. Jan. 25. Vol. 90. No. 2. pp. 59–60.

The studies so far undertaken on d'Herelle's phenomenon have omitted to take into due consideration the nature of the medium in which the test has been applied, for instance the albuminous content of the fluid. For this reason the action of proteolytic ferments upon the lytic substance was studied. The action of trypsin was first considered and it was found that the organism, notably Shiga's bacillus, flourished luxuriantly in this ferment, in a dilution of 1 : 200. The technique is described of experiments which lead to the conclusion that the lytic substance is entirely destroyed by the action of trypsin. Pepsin and papaïne proved, however, to be quite inactive in this respect. The conclusion is that the transmission of the lysogenic function is bound up with the existence of an albuminoid substance (possibly in the form of corpuscules) and disappears when this substance has undergone tryptic digestion.

P. H. M-B.

Brokman (H.). **Recherches sur la sensibilité individuelle de l'homme à la toxine dysentérique.**—*C. R. Soc. Biol.* 1923. Dec. 22. Vol. 89. No. 37. pp. 1355–1356.

During recent years it has been shown that considerable discrepancy exists in the individual susceptibility to diphtheritic toxin injected subcutaneously. The present paper deals with the sensibility of certain individuals to the Shiga-Kruse toxin. The standard employed was the toxin prepared in the State laboratory which was lethal to a rabbit in the dose of 0·1 gm. per kilogramme of body-weight ; 0·1 cc. of a 3 per cent. solution in normal saline was injected subcutaneously. Several hours after the injection an inflammatory area was noted, and at the end of twenty-four hours an oedematous zone which finally assumed a bluish tint. In the most marked reactions a haemorrhagic zone appeared after 48 hours. Insusceptible individuals showed only a fugitive erythema. In 20 per cent. of individuals a negative reaction was observed. The author attempted to prove that the reaction depended upon the toxic properties of the inoculation ; two controls were instituted, one with dysenteric toxin boiled for 10 minutes in order to destroy the toxic element, the other neutralized with anti-dysenteric serum. No reaction resulted from either. Eventually he was led to believe that differences in individual reactions were best explained by the presence of antitoxin in the blood of insusceptible individuals. He therefore mixed the serum of such an individual diluted 1 : 50 with an equal amount of toxin and incubated the mixture for 50 minutes. No reaction occurred after injection into susceptible individuals.

P. H. M-B.

POZERSKI (E.). **Sur l'excrétion de produits phosphorés par le Bacille de Shiga amené à la limite de sa végétabilité, soit par le chauffage, soit par l'addition de formol.**—*C.R. Soc. Biol.* 1923. Dec. 1. Vol. 89. No. 34. pp. 1094–1095. [3 refs.]

In a former communication the author noted that the addition of formol in a strength of 1 : 400 to a culture of Shiga's bacillus, not only prevented further growth of the organism, but also hindered the excretion of phosphorus products. But if formol is added in a strength of 1 : 4,000 growth is retarded after three hours' contact while the excretion of phosphorus compounds is maintained for another four days. Warming an emulsion to 60° C. for half an hour greatly attenuates the growth, and at 65° reproduction ceases. At the former temperature only minute traces of phosphorus are excreted.

P. H. M-B.

KOSTRZEWSKI (J.). **Krew chorych na czerwonke pod wzgledem bakterjologicznym i serologicznym. (Doniesienie III.) Bakteriologische und serologische Blutuntersuchungen bei Dysenteriekranken (III. Mitteilung).**—*Medycyna Doświadczalna i Społczna.* Warsaw. 1923. Vol. 1. No. 5–6–7. pp. 345–352. German Summary p. 351. [2 refs.]

This paper describes the successful isolation of Shiga's bacillus from the blood in 8·14 per cent. of cases studied in 1921. The mortality rate of this series was considerably smaller than those investigated in 1919. (See this *Bulletin*, Vol. 19, p. 37.) Positive agglutination results were obtained in 26·8 per cent. of cases.

P. H. M-B.

FEJGIN (Bronislawa). **Contribution à l'étude des races resistantes du bacille de Shiga-Kruse.**—*C.R. Soc. Biol.* 1923. Dec. 22. Vol. 89. No. 37. pp. 1381–1383.

The author studied a race of Shiga-Kruse bacilli which, on subculture, developed colonies resistant to the anti-Shiga bacteriophage. The individual organisms resembled *Bacillus coli* in form and the growth they produced on agar was denser than that of the Shiga bacillus. One of the subcultures provoked typical reactions with solutions of the sugars, another fermented glucose, maltose, laevulose and mannite; while the third produced acid and gas in lactose, glucose, arabinose, laevulose, mannite and dulcite and, in addition, reduced neutral red. Their agglutination reactions with polyvalent antidysenteric serum also varied considerably, while the organisms did not absorb agglutinins from this serum. Three rabbits were immunized, one with each of the strains, with the result that agglutinins to B. Shiga were produced and an antilytic substance. The toxicity of these resistant organisms was greatly reduced. The conclusion is reached that under the influence of the lytic substance is produced a new race differing in serological and biochemical properties from the original strain of B. Shiga.

P. H. M-B.

DOORENBOS (W.) & MULDERS (J.) **Melkpasteurisatie in verband met dysenteriebacteriën.** [Pasteurization of Milk infected with Dysentery Bacilli.]—*Tijdschr. v. Vergelijkende Geneesk. enz.* Leyden. 1924. Jan. 17. Vol. 10. No. 1. pp. 51–69. With 1 plate. [29 refs.] [English summary p. 66.]

Dysentery bacilli are easily killed at a temperature ranging from 50–60° C., less easily when suspended in milk than in water. Salts, peptone, sugars and broth seem to exert a protective action. Shiga's bacillus is killed in water in one, in milk in six minutes. The Leyden type of dysentery bacillus is more resistant than are the others to high temperatures. When a suspension of dysentery bacilli in milk is heated to 60° C. in bottles all the different types are completely destroyed in one hour, but the milk itself takes half an hour to reach this temperature.

P. H. M-B.

GAUTHIER (Aimé). **Essais de vaccinations et de vaccinothérapie par la voie buccale contre la dysenterie bacillaire.**—*Bull. Acad. Méd.* 1924. Jan. 15. Year 88. Vol. 91. 3rd Ser. No. 3. pp. 72–82.

The author of this paper was deputed by the League of Nations to inoculate the numerous refugees from Asia Minor and Eastern Thrace who poured into Greece after the disaster to the Greek Army in August 1923. His duties were to protect these unfortunate people against typhoid, cholera, smallpox, plague and dysentery. The total work performed may be judged by the following table.

Vaccination against smallpox	1,262,889
Tetra inoculation (T.A.B. & cholera) ...	651,680
Antiplague inoculations	93,243
Vaccination against dysentery (buccal route)	29,880
Typhoid vaccination (buccal route) ...	3,900

It is especially with the dysentery aspect of the subject that the author deals. At first he attempted inoculation by the hypodermic method, with a polyvalent vaccine of Shiga, Flexner and Hiss organisms. The reactions were very severe and abscesses sometimes resulted. By the buccal route two strains of vaccine were used; each contained 3,000,000,000 dead organisms to the cc., one composed of Shiga and Flexner, and the other with the addition of Strong's bacillus and Y.

The latter vaccine was rendered sterile by the addition of weak carbolic acid. Both seemed to exert the same protective action, but for massive work the carbolized preparation proved the more convenient. The dose was 1 cc. for an adult, half for from 2 to 6 years of age and a quarter for an infant under two, repeated for three days in succession. No reaction followed the administration. The serum reactions showed more positive agglutination after vaccination than was observed in cases suffering from bacillary dysentery. The titre of serum usually reached 1 : 250 for Flexner and Shiga on the third day. This method appeared to be most effective.

An epidemic of bacillary dysentery in the island of Hydra ceased immediately buccal vaccination was commenced. Six other local epidemics are recorded in which the result was equally striking. The vaccine also has therapeutic qualities; it is best given in mild cases for 3 or 4 days, in severe cases for 7 or 8 days, in daily doses not exceeding 2 cc. subdivided in three portions; in chronic cases this treatment is to be repeated at four-day intervals until all symptoms disappear. In cases of mild dysentery or simple diarrhoea an effect

is seen within 24–48 hours. In acute dysentery treatment should be continued in this manner for 6 days after cessation of symptoms.

P. H. M-B.

ANGLADE. **Note concernant un essai de vaccination locale de l'intestin contre la dysenterie, d'après le procédé de Besredka.**—*C.R. Soc. Biol.* 1924. Feb. 22. Vol. 90. No. 6. pp. 395–396.

A severe epidemic of bacillary dysentery having broken out in the Versailles garrison, immunization *per os* on the lines described by BESREDKA was instituted. No more deaths took place, and subsequently amongst the uninoculated 40 per cent. contracted the infection as contrasted with 7·6 per cent. of the inoculated. These figures, obtained from a total of 1616 men, are much in favour of this method of protection, and the author considers they would have been better had it been possible to ascertain by individual supervision that the pastilles were actually swallowed in every case.

P. H. M-B.

ANTONOVSKY (A.) **Essai de vaccination antidysentérique** *per os*, **d'après le procédé de Besredka.**—*C.R. Soc. Biol.* 1924. Mar. 7. Vol. 90. No. 8. p. 564.

There was an extensive epidemic of bacillary dysentery in Petrograd in 1923, so that vaccination *per os*, according to BESREDKA'S method, was put to the test. The first case was noted on July 13, vaccination lasted three days, and when completed on July 31 some 85 cases of dysentery had occurred. 1,000 out of a total of 2,768 persons in one asylum were thus treated, while 1,768 were not vaccinated. Up to the end of the epidemic on September 15 there were recorded 56 cases of dysentery among the non-vaccinated and 12 amongst the vaccinated, of which 9 occurred within 10 days of vaccination.

The mortality rate was 3·1 per cent. in the non-vaccinated and 0·3 per cent. in the vaccinated. In the Botkine hospital, where all the dysenteric patients were collected, the personnel was for the greater part vaccinated *per os*. Amongst 257 persons thus treated only 1 contracted dysentery, amongst 105 non-vaccinated there were 4 cases.

P. H. M-B.

i AIYA (Tomogoro). [**On the Relation between the Contraction of the Scrotum and the Prognosis of a Disease, especially of Ekiri and Infantile Dysentery.**]—*Tokyo Iji-Shinshi* (*Tokyo Med. News*). 1923. Feb. No. 2315. [Summarized in *Japan Med. World.* Tokyo. 1923. Oct. 15. Vol. 3. Nos. 9 & 10. p. 224.]

ii. TANAKA (Toshiwo). [**On the Cerebral Symptoms and the Genesis of the Syndrome in Severe Infantile Dysentery and Ekiri.**]—*Iji Shimbun* (*Med. News*). 1923. Mar. No. 1114. [Summarized in *Japan Med. World.* Tokyo. 1923. Oct. 15. Vol. 3. Nos. 9 & 10. p. 224.]

iii. TANAKA (Asazo). [**On a Variety of Non-Acid Dysentery Bacillus.**]—*Kaigun Gun-I-Kwai Kwaiho* (*Proc. of the Nav. Med. Corps*). 1923. May. No. 40. [Summarized in *Japan Med. World.* Tokyo. 1923. Dec. 15. Vol. 3. No. 12. p. 280.]

iv. YAMADA (Tsunetomi), INOUYE (Zenjuro) & KAKINUMA (Ryoji). **Expedition for Prevention of Dysentery prevailed in a Small Island: Toshima.**—*Scientific Reports from Govt. Inst. for Infect. Dis.* Tokyo. 1922. Vol. 1. p. 73.

v. Lipinski (Witold). **Wplyw podlozy cukrowych na zdolność zlepna pratków czerwonkowych. Influence des milieux sucrés sur l'agglutination des bacilles dysentériques.**—*Medycyna Doswiadczalna i Spoleczna.* Warsaw. 1923. Vol. 1. No. 5–6–7. pp. 305–316. French summary p. 315. [14 refs.]

i. The contraction of the scrotum in ekiri forebodes a bad prognosis and coincides with cerebral symptoms, cyanosis, weakened cardiac function, etc.

ii. The author ascribes the cerebral symptoms of ekiri to secondary encephalitis due to the absorption of dysenteric toxins.

iii. In every case of diarrhoea and dysentery that occurred in the Sosebo Naval Station a variety of non-acid dysentery bacillus could be isolated, and appeared to be identical with Schmitz's bacillus. It is agglutinated strongly by the patient's serum, but not at all by Shiga serum.

iv. Briefly describes a small epidemic of dysentery caused by Shiga's bacillus. There were 36 cases and 2 deaths.

v. When grown on sugar media some strains of Shiga's bacillus, which formerly clumped with difficulty, did so with ease even with greatly diluted serum.

P. H. M-B.

Mixed and Unclassed Dysentery.

Bassett-Smith (Percy). **Naval Medical History of the War. Section of Tropical and Sub-Tropical Medicine. Part III.—(i) Dysentery; (ii) Liver Abscess; (iii) Sprue; and (iv) Epidemic Diarrhoea.** [By Dudley (S. F.).]—*Jl. Roy. Nav. Med. Serv.* 1923. July & Oct. Vol. 9. Nos. 3 & 4. pp. 203–211; 270–277. With 1 chart.

(i) "Torrified Meal," a substance supplied to the British Admiralty during the War, was investigated in order to test the claims that had been made for it. The belief was that its action was antiseptic and prevented excessive fermentation in the bowel, and that by the conversion of gluten into peptones and starch into dextrin intestinal assimilation was facilitated. The meal was prepared from wheaten flour, bean, barley and rice flour, and of these the first only was thoroughly investigated.

Bacteriological tests showed that it exerted no inhibitory effect upon cultures of pathogenic intestinal organisms *in vitro*. From feeding experiments on guineapigs it became evident that it was insufficient to nourish the young animals or to prevent the onset of scurvy. The results of clinical treatment on 5 chronic bacillary and amoebic dysentery cases was favourable, but antiscorbutic substances must be given and the patient should be kept in bed.

(ii) Considering the number of cases of amoebic dysentery the records of liver abscess in the Navy during the War are very few. There were 3 cases in 1915 and one each in 1917 and 1918.

(iii) During the War there was a very considerable number of post-dysentery sprue cases. A clinical record with autopsy findings in an advanced case with tetany is given.

(iv) An account of a serious epidemic of diarrhoea at the Aircraft Depot, Dunkirk, in July and August 1917 associated with large numbers of houseflies. Out of a complement of 1,500 344 cases were admitted to the sick list, while an equal number remained at work. Some cases were dysenteric and passed blood and mucus, although no pathogenic

organisms, with the exception of B. Morgan No. 1, were isolated. Everything possible was done to protect the food from flies, but these efforts were nugatory on account of the insanitary state of a neighbouring camp.

P. H. M-B.

DESCHIENS (R.). **Le rôle pathogène de "Giardia (Lamblia) Intestinalis."**—*Arch. des Malad. de l'Appareil Digestif et de la Nutrition.* [? 1923.] Vol. 13. pp. 136–148. With 1 plate & 1 text fig. [3 refs.]

This is an argument upholding the proposition that *Giardia intestinalis* is pathogenetic. After a brief historical retrospect the author records in detail a considerable series of varied experiments that confirm the experimental evidence published in 1916 by FANTHAM and PORTER in support of that proposition. (See this *Bulletin*, Vol. 8, p. 454.) Using all laboratory formalities of execution and control, he brought about enteric disturbance and true dysenteriform outbursts in 96 per cent. of clean young cats (*a*) fed on cysts of *Giardia muris* and *intestinalis*, and (*b*) inoculated per rectum with active forms of the latter; in a large proportion of cases the attacks were rather rapidly mortal, and at the autopsies inflammatory and necrotic lesions were found in the intestine, along with active forms of the parasite throughout the intestinal tract, but particularly in the small intestine where the follicles of Lieberkuhn and the spaces between the villi were stuffed with them. He also produced diarrhoea—in 60 and 66 per cent. of cases fatal—in clean mice fed (*a*) on cysts of *G. intestinalis* and (*b*) on cysts of a strain of *G. muris* that had caused fatal enteritis in the cat, and a non-fatal diarrhoea in 60 per cent. of clean mice fed on cysts of ordinary *G. muris*; but he could not injure mice already infected with *G. muris* in attempts to super-infect them with *G. intestinalis*. The author, furthermore, marshals the recorded anatomical, clinical, and statistical evidence supporting the pathological interpretation of *Giardia*, but he adds nothing more from his personal experience except the statement that in the stools of 300 healthy subjects examined by him in recent years Giardia cysts were discovered in only 1·7 per cent. against 5 per cent. in stools from 300 dysenteric and enteritic subjects.

A. Alcock.

DESCHIENS (R.). **Sur l'habitat et la répartition des Giardies chez les "Porteurs sains" et les "Porteurs malades."**—*Bull. Soc. Path. Exot.* 1923. Dec. 12. Vol. 16. No. 10. pp. 735–737. [7 refs.]

The object of this paper is to emphasize the fact that Giardia is not, even in healthy hosts, limited to the duodenum and its immediate vicinity, but that its distribution is influenced by varying conditions of the intestine, even by phases of digestion.

A. A.

LE NOIR & DESCHIENS (R.). **Action antiparasitaire du carbonate de bismuth à doses massives dans certaines infestations vermineuses ou à protozoaires du tube digestif.**—*Arch. des Malad. de l'Appareil Digestif et de la Nutrition.* 1923. Nov. Vol. 13. No. 9. 7 pp.

In this section only pp. 5–6, dealing with *Giardia intestinalis*, are considered. Results are given of 9 cases of infection with this parasite

treated with *pure* carbonate of bismuth according to the following formula :—A course of 30 gm. daily given in the morning, on an empty stomach, for 8 days, the course to be reiterated at two-day intervals for 42 to 60 days. In the 9 cases, all heavy infections, so treated Giardia definitely disappeared on the 21st day in 3, and between the 30th and 50th days in 4 : 1 case is still infected on the 70th day, and 1 case is still under hopeful treatment on the 35th day. In a cat treated in the same fashion, but with a proportionately reduced dosage, the parasites disappeared on the 21st day.

A. A.

DESCHIENS (R.). **Action antiparasitaire des sels de bismuth "per os" et à doses massives dans les infestations à Giardia.**—*Bull. Soc. Path. Exot.* 1923. Dec. 12. Vol. 16. No. 10. pp. 737–741. [2 refs.]

The author, having made experiment on cats and in human cases, finds that bismuth carbonate and subnitrate are fiercely expulsive for Giardia. They must be given in big doses—50 to 60 gm. daily—and the treatment should continue for 1 or 2 months, during which term lurking parasites should be roused every ten days by a stoppage of bismuth and an administration of bile or calomel.

A. A.

KANTOR (John L.). **Lamblia (Giardia) Infection associated with Cholecystitis. Report of a Case treated with Neo-Arsphenamin.**—*Arch. Intern. Med.* 1923. Nov. 15. Vol. 32. No. 5. pp. 693–704. With 1 chart. [34 refs.]

The object of this paper is to show that patients can be cured of Giardia infection by intravenous injection of arsphenamin. Until recently the diagnosis of Giardia infection could be made only by an examination of the faeces, but now by the use of the duodenal tube the active flagellate form of the parasite can be found in the duodenal contents. The action of the drug upon the parasite was first suggested by the work of POMARET, A.,* who showed that the arsenic from this compound is actually excreted in the bile, and this has been recently elaborated by workers in the United States. This fact, combined with the observation that the Giardia in the duodenum are probably derived from similar organisms in the gall-bladder, led to the employment of this drug. Further, when arsphenamin is injected per rectum it behaves in exactly the same way as when given intravenously.

The initial dose should be as large as possible (0·6 to 0·9 gm. neoarsphenamin for an adult). Apparently these large doses are sometimes followed by severe reactions; therefore comparatively small "desensitizing" doses of 0·2 gm. should be given. If no untoward effects occur within an hour, the rest of the initial dose may be administered. One case is here recorded in which after three doses of the drug no more parasites were found, either in the washings of the duodenum obtained by means of the duodenal sound, or in routine examination of the stools, for a period of six months.

P. H. M-B.

* La Médecine, 1920, Vol. 2, p. 123.

FELSENREICH (G.) & SATKE (O.). **Ueber Cholangitis durch Lamblia intestinalis.**—*Virchows Arch. f. Path. Anat. u. Physiol.* 1923. Vol. 245. pp. 364–386. With 3 figs. [37 refs.]

This long paper, based on continuous observation of 8 cases, supports the view that *Giardia intestinalis* inhabits not merely the duodenum of its host but also the bile ducts and gall bladder. What the authors bring forward as conclusive evidence in favour of the liver argument is the abundance in clear drawn duodenal juice of inspissated mucus in the form of elongate branching membrane-like fragments and casts (Gallezylindern). The authors regard Giardia as pathogenetic not merely by absorption from the epithelial cells to which they adhere, but also by various troubles—real as well as subjective—referable to the liver and gall-bladder. For treatment they recommend neosalvarsan.

A. A.

SIMON (M.) **Ueber die Häufigkeit der Lamblieninfektion im Rheinlande.**—*Cent. f. Bakt.* I. Abt. Orig. 1924. Feb. 15. Vol. 91. No. 5. pp. 309–314. [11 refs.]

Examination of the stools of 137 persons in Bonn revealed *Giardia intestinalis* in 23·4 per cent.; 77·4 per cent. of the persons examined were under 15 years old, and in them the percentage of infection was 27·4 per cent.; the youngest instance of an infection was an infant of nine months. In one-third of the cases there were no symptoms. In the other two-thirds there was some history of intestinal disturbance, but mostly either of a trifling kind or long antecedent and not persistent. Any case of true Giardia dysentery was not observed. The Giardia infection was relatively frequent in tuberculous individuals.

A. A.

BRANDT (W.). **Ueber Balantidien-Enteritiden und ihre Therapie.**—*Deut. Med. Woch.* 1923. Nov. 16. Vol. 49. No. 46. pp. 1437–1438.

The author has seen three cases of Balantidium enteritis in his clinic during this year. The interest of the paper centres in the treatment of this intractable condition, the history of which he reviews. He found quinine enemata, 1½ grm. of quinine hydrochloride in 1½ litres to be effective, and in another case ipecacuanaha still more so. This was given in the usual way in 1 gm. doses daily, and he thinks that it is a specific for *Balantidium coli*.

P. H. M-B.

SPRUE.

Bastedo (Walter A.) & Famulener (L. W.). **Tropical Sprue. A Critical Study of Cases.**—*Jl. Amer. Med. Assoc.* 1923. Dec. 22. Vol. 81. No. 25. pp. 2102–2108. With 1 text fig. [48 refs.]

One of the authors has seen thirteen cases of sprue in New York. In five, in which extensive mycologic studies were carried out, the blood picture was that of a secondary anaemia. In the patients who died the colour index was high and the blood showed the characteristics of pernicious anaemia. Only two cases, one fatal, showed a leucopenia. The blood pressure was regularly low—the systolic ranging between 80 and 110, the diastolic between 52 and 80. Indican was present in the urine, but no urobilin. Analysis of the gastric contents showed the acidity curve to be within the normal limit, while in the two fatal cases a lower reading was recorded. Trypsin tests on the faeces and duodenal contents showed this pancreatic ferment to be present. Bile pigment was regularly present in the stool in their cases; the reaction was acid, but sometimes alkaline. They were unable to substantiate any relation between the reaction and the presence or absence of indican in the urine. The dried faeces showed fat content varying from 16·7 to 38 per cent. Examination with the sigmoidoscope revealed nothing abnormal in 6 cases. X-ray examination showed dilatation and sluggishness of the lower end of the ileum.

As regards the etiology, the yeasts of the genus *Monilia* isolated from the faeces were compared with stock cultures obtained from Ashford. In no instance were they able to confirm the sugar reactions said to be characteristic of *Monilia psilosis*. No liquefaction of gelatine was produced, nor the inverted pine-tree growth in stab cultures. They obtained Monilia in 4 to 5 of their own cases, but in no single instance did these agree in their reactions, nor with those obtained from Ashford. Monilia vaccines obtained from the Hygienic Laboratory produced no effect in three severe cases. Their investigations on *Streptococcus viridans* were also negative.

The authors are of the opinion that the emaciation, diarrhoea and stomatitis of sprue are indicative of a deficiency disease, and they have come to speculate upon the existence of a possible common factor in pellagra and in sprue. They call attention to the wide geographical distribution of sprue, as illustrated by their cases, and they suggest that possibly an infection with Monilia may be the precipitating cause of the disease, but they consider that Ashford's claim for the specificity of *Monilia psilosis* rests on slender foundation.

P. H. Manson-Bahr.

Bramwell (Byrom). **Sprue and Pernicious Anaemia.**—*Brit. Med. Jl.* 1924. Mar. 1. pp. 365–366. [1 ref.]

The author records his impressions of clinical similarity between some cases of sprue and pernicious anaemia. In sprue anaemia may be very marked and may present the characteristic features of pernicious anaemia. In both diseases the blood-destruction appears to take place in the portal circulation, but in pernicious anaemia there is no extreme emaciation, as in sprue; in the former, as pointed out by Hurst, there is achlorhydria. In pernicious anaemia, as in sprue, the mouth and tongue lesions are part and parcel of those in the gastro-intestinal tract. In two cases of sprue there was found at autopsy and described by Prof. Muir profound atrophic changes in

the voluntary muscles; these took the form of great proliferation of the nuclei of the sarcolemma and degenerative changes in the fibres. Similar changes were subsequently discovered in a third man who had no symptoms of sprue and who apparently died of nicotine poisoning.

Bramwell suggests that parathyroid extract should have a trial in pernicious anaemia.

P. H. M-B.

Proceedings of the Royal Society of Medicine. (Sect. Trop. Dis. & Parasit.) 1924. Feb. Vol. 17. No. 4. pp. 11–25.—**Discussion on Sprue and Coeliac Disease.** (Rogers (L.) & others.)

Rogers reviewed the generally described pathological changes in sprue and their bearing on the analyses of the gastric and intestinal contents. Hill diarrhoea he regards as a physiological deficiency of intestinal digestion, but thinks that it predisposes towards the development of true sprue. With reference to the part played by the vitamins in sprue, he thinks there is a diminished absorption of these substances due to intestinal atrophy.

Miller discussed Coeliac disease in children, and thinks that it has nothing in common with sprue, for the following reasons:—

The first symptoms are always seen in childhood; it does not persist to adult life.

The patient grows in a normal manner and keeps free from symptoms when he subsequently takes a normal diet. The disease is never fatal and never occurs in epidemic form.

The primary factor appears to be digestive fault leading to malabsorption of fat. The faeces bear a rough resemblance to those of sprue, but the tongue is never ulcerated.

Other participators in the discussion produced no new theories or facts. The paper by Scott on recent investigation of calcium metabolism has recently been reviewed. Manson-Bahr believes the essential pathological lesion in sprue to be an ulceration of the small intestine.

P. H. M-B.

Scott (H. H.). **The Nature and Treatment of Sprue.**—*Brit. Med. Jl.* 1923. Dec. 15. pp. 1135–1137. [1 ref.]

An account is given of the case, two years' study of which formed the basis of the author's recent but already well-known method of treatment by parathyroid. The large pale stools showed a relative excess of fatty acids and a relatively large excretion of calcium; there were troublesome carpopedal spasms such as are associated with calcium deficiency. The flatulence, acidity and diarrhoea, aphthae, languor, loss of weight, might be attributed to intestinal intoxication. These considerations led him to the trial of parathyroid, which has a two-fold function: the regulation of calcium metabolism and detoxication, in particular, of poisons of intestinal origin. Some improvement was produced by the use of calcium lactate; it was transitory, but when parathyroid was added "a wonderful change took place. Developed aphthae rapidly healed, commencing ones, as sore papillae and tender spots, receded without becoming aphthae, the flatulence was diminished, the stools became fewer and smaller, the colour began to return, and the general sense of well-being was regained. Within so short a time as a fortnight all the more acute symptoms had disappeared; food was increased, calcium was stopped, and in five weeks the patient was on ordinary diet. The parathyroid was

gradually left off, and in six weeks from its first employment was stopped altogether. Nearly eleven months have gone by and he has lived a normal life, working hard Sundays and weekdays, paying no regard to diet, taking alcohol on occasion, and has not had a day's illness since. This is not altogether an exceptional case. I have records of other patients who have done nearly, some quite, as well; one even better."

One of two conditions appears to be antecedent of sprue: either the fats are in excess in the diet which leads to the formation of calcium soaps, with excessive excretion of calcium in addition to intestinal intoxication, or there is excess of protein with intestinal toxin formation. "In both, the parathyroid detoxicating function is overburdened, with a resultant disorganisation of its calcium-regulating function, while there may be in addition diminished calcium absorption. Both functions, therefore, of these glands are interfered with." Calcium is normally present in the blood in two forms, the ionic or free, and the combined or coagulative. In calcium deficiency the relation between these forms is upset, the blood after clotting contains calcium in the combined form and there is then relative deficiency of ionized calcium. The calcium values in sprue estimated by VINES before and after treatment are shown in the table.

Since the first case was reported Scott has had word of the treatment of eight cases in the Far East, all of whom had been under treatment by the usual methods for 1½ years or more. In one of these a complete cure was effected in five weeks.

Table of Calcium Contents of Blood Normal and in Cases of Sprue.

	Free Ca.	Combined Ca.	Total in mg. per 100 c.cm. serum.
Normal (after clotting)	10·7	0·0	10·7
McG. Fairly severe case.			
Before starting treatment ..	6·1	3·8	9·9
After one week	8·1	1·8	9·9
After two weeks (good progress)	10·1	0·0	10·1
H. S. Average case. Not taken on arrival. Weight 118 lb.			
After one week (gained 3¾ lb.) ..	7·0	2·9	9·9
After two weeks (weight 127 lb.)	7·4	2·7	10·1
After three weeks (weight 133¼ lb.)	10·8	0·0	10·8
After four weeks (weight 142¾ lb.)	10·8	0·0	10·8
C. W. Mild case; nine months ill. (Bombay.)			
Before starting treatment ..	8·0	1·9	9·9
After two weeks (to have fish, chicken, potatoes, milk, biscuits, carrots, eggs)	8·9	1·2	10·1
After three weeks (to have meat, beef, mutton, ordinary food). After four weeks, reported himself quite well, 2 lb. above normal weight.	10·4	0·0	10·4

P. H. M-B.

Cornelius (Stephen). **Parathyroid in Sprue.** [Letters, Notes, etc.]—*Brit. Med. Jl.* 1924. Feb. 16. p. 306.

A note recording the successful treatment, by parathyroid extract and calcium lactate, of a lady in Bombay with sprue. Her diet, which was restricted to milk, was rapidly amplified, and within ten days the improvement in her general appearance was very striking. no other details are given.

P. H. M-B.

YAWS.

GILKS (J. L.). **Yaws in Kenya Colony.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1923. Nov. 15. Vol. 17. No. 5. pp. 277–282. With 8 text figs. and 1 graph.

Yaws is found in all parts of Kenya Colony and Protectorate [a narrow strip of coast] up to 5,000 feet, but more especially in certain specified areas. It is uncommon in the towns, probably owing to European clothing and the conditions of employment of natives. From hospital and survey statistics of a large number of natives in the Fort Hall and Central Kavirondo districts the percentage of infection therein is put at 3·5. It is estimated that 60,000 persons require treatment. Here, as elsewhere, novarsenobillon treatment has had astonishing results. A special yaws camp started in the Kikuyu reserve was attended as follows:—In 1918, 325; 1919, 639; 1920, 657; 1921, 7,401; 1922, 24,233. Financial considerations then caused the institution of a small fee and the run was checked. Fortunately it was possible to replace N.A.B. by the much cheaper bismutho-tartrate of potassium. This is made locally and costs one-tenth of a penny per dose. It has a bismuth content of 54·5 per cent. and differs slightly from trepol. It is stable, easily dissolved and boilable and is injected deeply into the muscles. Care must be taken to avoid stomatitis. Lesions clear up rapidly, but whether cure is lasting is unknown.

It is sought in Kenya to eradicate the disease by treatment of individuals with this drug. Dressers trained in the giving of injections are stationed in yaws centres and supervised by medical officers equipped with motor transport. With the help of the administrative officers and chiefs it is hoped that the majority of the patients will come for treatment.

In the discussion CASTELLANI pointed to the administration of mercury to distinguish in doubtful cases between syphilis and yaws, AUSTEN to the need for study of the flies which are believed to spread yaws, and investigation of their life history with a view to their eradication, near yaws camps at any rate, and HANSCHELL to the absence of yaws from Barbados though it used to be common on that island [see this *Bulletin*, Vol. 6., p. 350]; it is introduced from other islands but does not spread; here is the place for yaws research.

In the photographs are shown some advanced tertiary lesions.

A. G. B.

WINCKEL (Ch. W. F.). **The Framboesia-Problem in the Dutch East Indies.**—*Meded. Burgerlijk. Geneesk. Dienst in Nederl.-Indië.* 1923. Part 3. pp. 213–226. With 6 plates. [12 refs.]

Yaws in Java is chiefly a disease of the low country, but in Sumatra it is frequent on the Batak plateau, at an altitude of over 3,000 feet. In parts of the Dutch East Indies the incidence is variously estimated at 12 to 90 per cent. of the population. Of 643 children examined at Acheen 348, or 55 per cent., were affected. An imposing array of evidence is given of the prevalence of tertiary lesions, the existence of which is doubted by POWELL. Thus, BRUG (1911) in Sumatra in his station records found 532 cases of tertiary syphilis and only 2 of primary and secondary syphilis; the former were shown

to be yaws. In Sumba Island KUYER (1922) found syphilis practically non-existent, but 70 per cent. of the population had had yaws and many suffered from periostitis, arthritis and gummata of various organs, besides "pseudoleprosy."

Treatment on a large scale was impossible in the war as salvarsan was not obtainable, but was commenced in 1919. An account is given of the propaganda to get the natives to attend the treatment centres. The author lays stress, as propaganda, on payment by the patients, which he finds has three advantages : hitherto all drugs and dressings had been given away, even to well-to-do patients, but the people now learn that a reasonable return should be made ; the control of yaws causes little expense to the Government beyond the salaries of the doctors ; by asking payment of those who can afford it the number treated has increased enormously [the reason for this is not apparent to the reviewer, and experience elsewhere has been to the contrary].

Treatment, by intravenous injections of neosalvarsan, 0·45 gram for an adult, is ambulatory, which with stated precautions is comparatively free from risk. The precaution to give injections only to those who need treatment is not easily complied with. Many patients come whose only complaint is pains in the bones ("sakit tulang") and if there are no objective symptoms decision is difficult, for the medicine being regarded by the native as a panacea sakit tulang is often feigned. With good organization and well trained assistants 600–800 injections may be given daily.

The author refers to SPITTEL's book [this *Bulletin*, Vol. 20, p. 263] in which he lays stress on the necessity in Ceylon for home treatment. This would be impossible in the D.E.I. where in a population of 45 millions there is one doctor to 300,000 people. One injection only is given ; it is recognized that this is insufficient, but it is all the native wants or will stay for ; if lesions return he will come again. His appreciation of the remedy is shown by citations from songs with which HATA was greeted when he visited Java in 1921. From August 1919 to June 1923, 890,000 patients (apart from private cases) have been treated with 300 kilos. of neosalvarsan, for which the people have paid fl. 340,000. The author regards neosalvarsan as the medicine *par excellence* for popularizing western medical science.

Excellent photographs show patients before and after treatment.

A. G. B.

SALM (A. J.). **Quelques notes sur le pian et son traitement à Java.**— *Bull. Soc. Path. Exot.* 1923. Oct. 10. Vol. 16. No 8. pp. 580–582.

Yaws is very common in the Dutch East Indies. The author draws attention to the difficulty of statistical comparisons when some observers regard only the ulcerous forms, while others include the plantar manifestations and others again the tertiaries. In Java the disease is being seriously combated ; one injection of salvarsan or neosalvarsan is regarded as sufficient. Patients are classed as non-paying, and as those who pay half a florin, one florin or one and a half florins, respectively, for each injection. In the last three months eight doctors have treated 2,565 patients, of whom 2,217 paid a total of 2,175 florins, leaving a sum of 1,081 florins to be met from State

funds. Propagandic posters representing patients before and after treatment, with legends in various tongues, are distributed in native schools, railway stations and headmen's houses.

A. G. B.

Wilson (P. W.). **Observations concerning Yaws in Haiti.**—*U.S. Nav. Med. Bull.* 1924. Feb. Vol. 20. No. 2. pp. 190–196.

Syphilis and yaws coexist in Haiti " in abundance," and if it be true that Columbus brought syphilis from Haiti at the end of the 15th century and that yaws was introduced to that island at the beginning of the 16th century with the first batch of West African slaves the two infections have long coexisted. It is suggested that the African throve in company with the syphilized Indian because he was immunized by yaws.

The author has seen only 19 cases of secondary yaws during 9 months in Haiti but over 200 in the tertiary stage, and he is prepared for the suggestion that many of these were syphilis [a reasonable suggestion if syphilis is " abundant," seeing that there is no certain means of distinguishing these infections in their late stages]. But he has another explanation. For all Haitians yaws is a " disease of shame " to which they can hardly be got to admit, and he suggests that this goes back to the time of the yaws houses instituted by the planters, in which the sufferers were isolated " like lepers." At Jacmel, a coast town, secondary yaws is practically unknown, for the simple reason that a case, as soon as discovered, has to leave the town. No early yaws cases are allowed to remain. In the country the sufferer keeps out of the way of his fellows; he never seeks medical assistance and his treatment consists in daily baths in clear, cold water. The belief is that he must not get well too quickly, and of 17 who were invited to come to the hospital for treatment none turned up. The tertiary patients attribute their condition to anything but yaws.

Of the tertiary yaws lesions the most frequent are those resembling tubercular syphilides with ulceration, then periostitis and osteitis of the bones of the leg with ulceration of the skin and then destruction of the bones of the nose and the hard palate. Twelve cases of sabre-shaped tibia have been observed. Bones involved are the clavicle, scapula, radius, ulna and small bones of the hand and foot. Humerus, femur, ribs and vertebrae seem to be usually exempt. Crab or foot yaws is common, but this is a late secondary phenomenon and is recognised as framboesial. The author finds that 3 weekly salvarsan injections are needed for tertiary cases and that there is little clinical improvement after a fourth. He suggests that a relatively painless method of giving an effective arsenical subcutaneously is much needed and that sulpharsphenamine may fill the bill. Treatment in Haiti must be taken to the patient. Here, as elsewhere, yaws seems to be a disease of the country, syphilis of the town. [For an account of yaws in another part of the same island, see this *Bulletin*, Vol. 20, p. 172.]

A. G. B.

Knowles (R.), Chopra (R. N.), Gupta (J. C.) & Das Gupta (B. M.). **Notes on Some Cases of Framboesia.**—*Indian Med. Gaz.* 1923. Oct. Vol. 58. No. 10. pp. 470–473. With 8 figs. [2 refs.]

Twelve cases of yaws from a village in the Cachar District of Assam [where Powell studied the disease for ten years, this *Bulletin*, Vol. 20,

p. 835] were sent to the Calcutta School of Tropical Medicine for study and treatment. Full particulars of each are given in a table. The duration of the disease varied between 2 and 6 years. In the study of the lesions 4 to 7 films were examined by dark ground illumination or by staining. In all but two *Spironema pertenue* was found in abundance ; 25 examinations from 20 lesions yielded 22 positives and 3 negatives. On the other hand, the Wassermann tests, by Major Lloyd, Imperial Serologist, gave 5 positives, 4 incompletely negative, and 3 negative. It is concluded that search for the parasite by dark ground illumination is a better diagnostic procedure than the serological test. The capillary pipette method was useless.

"The best technique is that advocated by Ashburn and Craig (1907), and is as follows. The surface of the sore is cleansed with a cotton wool swab soaked in warm water and then allowed to dry. The lesion is now gently scraped with the blunt end of a glass slide. If any bleeding occurs it must be checked by pressure. The final exudate is serum only, which is usually found under dark ground examination to be rich in actively motile *S. pertenue*, 4 to 5 per field. Dark ground examination gave a far better percentage of positive findings than did examination of stained films. With regard to the latter, films intended for staining by Fontana's method should be fixed by methyl alcohol, before the mordant is used. The results are far better and the spirochaetes more easy to find after such preliminary fixation."

Attempts at cultivation were made in Noguchi medium, in Row's haemoglobin saline medium and by Ashburn and Craig's capillary tube method. All failed. Four *Macacus rhesus* monkeys and four Belgian hares were inoculated, the former in the abdomen and eyebrow, the latter in cornea and testis. Strains of virus from four patients were used. All inoculations were negative. Two of the monkeys developed eyebrow nodules like yaws but *S. pertenue* could not be found in them.

Sulfarsenol and silver salvarsan were used in treatment. They were of about equal efficacy, one to three injections being required. Sulfarsenol is cheaper and can be given subcutaneously as well as intravenously. Subcutaneous injection of this drug is not followed by a fall of blood pressure. Among subsidiary findings—each patient was submitted to routine examination—eleven out of the twelve had malarial parasites, all three varieties, quartan predominating.

A. G. B.

Beurnier & Clapier (P.). **Notes sur quelques méthodes actuelles de traitement du Pian.**—*Bull. Soc. Path. Exot.* 1924. Jan. 9. Vol. 17. No. 1. pp. 94–101.

The authors discuss the treatment of yaws in tropical Africa under the headings (1) Intravenous injection ; (2) Subcutaneous and intramuscular injections ; (3) Treatment by mouth.

(1). They state that intravenous injections are now readily accepted by all native peoples. For reasons given this channel has its drawbacks, for it has to be remembered that prophylactic treatment in Africa must be entrusted, at least partly, to African assistants. Novarsenobenzol or "914" has the chief vogue. It is rapid in action but changes somewhat in the tropics, varies in the colour of the solutions, which makes one suspect the constancy of its action, and is to some extent toxic. Care must be exercised in its use ; doses should never exceed 0·6 to 0·75 gm. and should at first be small ; the urine should be examined for albumen before the first and after each injection.

" 189 " has no advantages over " 914 " and tartar emetic, though its dosage, etc., is discussed, is clearly not favoured.

(2). " 914 " can be given thus if the doses are very small, but lymphangitis is frequent and abscesses not rare.

" 189 " given every other day in a freshly made 10 per cent. solution in boiled and cooled water gives excellent results, 0·3–0·75 gm. for a child, 1 gm. for an adult ; 4–6 injections suffice. With intervals of 48 hours toxic symptoms may develop if these doses are multiplied ; with 72 hour intervals recovery is slow. Sulfarsenol is good but the authors have little experience of it.

Bismuth—Case histories are given of 4–8 cases treated severally and successfully with Muthanol, Bischloral, Neo-trepol, Quinby, Spirillan, with no details of the make up of these substances. The action of all seems to be remarkably good. Apparent cure is obtained in less than 15 days. No serious drawback was noted and little pain. Often the general state and the weight improved. They think that these injections could be entrusted to native hospital assistants of average skill.

(3). Castellani's mixture in the authors' hands has caused the disappearance of lesions in 16 and 17 days. It has the advantage that its ingredients are to be found in every dispensary.

A fresh solution of " 189 " in boiled water acts well. Recovery in ten days may be obtained with the doses recommended for injection, but to avoid diarrhoea medication at 3 day intervals is better though cure is delayed.

Stovarsol or " 190," the acetyl derivative of the last, is very effective. It is put up in whitish tablets of 0·25 gm., dissolving readily in water. The authors have a large experience of its use. One gm. is the dose for an adult weighing 50 kilos or more. It is given every 48 hours in the morning before food for not more than 8 times for an adult. If lesions are still present, or diarrhoea is complained of, wait a week, and resume with smaller doses, but lesions usually disappear between the 10th and 15th day. Treatment by mouth is unsuited for small children.

Four cases were treated successfully with " bismhydral."

The conclusions to which the authors came are that large scale treatment by intramuscular or subcutaneous injection and by mouth is alone practical in Tropical Africa. The salts of bismuth by intramuscular injection are strongly indicated and by mouth stovarsol given with prudence ; these two are the authors' choice.

A. G. B.

HOWARD (Robert). **A Note on the Treatment of Yaws with Sodium Bismuth Tartrate.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1923. Dec. 13 & 1924, Jan. 17. Vol. 17. Nos. 6 & 7. pp. 437–438.

The sodium bismuth tartrate was received from Messrs. Howards & Sons. For an adult the author dissolves 6 grains in 40 minims of distilled water and injects deeply into the gluteal muscles. About 100 cases were treated, mostly in the secondary stage, as out-patients with two injections at a week's interval. Stomatitis was seen only once, in a patient with pyorrhoea. The results are nearly equal to those of neokharsivan, but the bismuth salt is much cheaper, less than a farthing a dose, and is more stable.

A. G. B.

BAERMANN (G.). **Die schützende Wirkung von "Stovarsol" bei Framboesia tropica.** [Stovarsol as a Prophylactic in Yaws.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1923. Aug. Vol. 27. No. 7. pp. 229–234.

Stovarsol, or "190," is the sodium salt of acetyl-oxyamino-phenyl-arsenic acid and is sold in tablets of 0·25 gm. These are swallowed half an hour before meals either dry or dissolved in water; one gram may be taken daily for 3–5 days. Previous experiments by LEVADITI and others, on man and guineapigs inoculated with syphilis, are cited; the results were so good that the author decided to test the preventive action of the drug in yaws, with the incidental advantage that the results of infection are much less serious than with syphilis.

On December 21 a typical "gulden-sized" framboesial nodule was removed from a Javanese with a typical yaws eruption, in the serum of which *Spironema pertenue* were seen by dark field illumination. From this a healthy European volunteer was inoculated. His Wassermann reaction tested by three methods was negative. A patch on his leg was scarified till blood-strained serum issued and the upper surface of the excised nodule was rubbed in for two minutes. The lesion was air-dried and not bandaged. An hour later 3 tablets of stovarsol were swallowed, and on the three succeeding days 4, or 3·75 gm. in all. The scarifications healed in 6 days and up to February 25 the skin remained normal, there was no gland enlargement and three Wassermann tests at 14 days interval were negative. On the same day a *Macacus nemestrinus* of 5 kilos was similarly inoculated. He received one tablet on the following, 2nd, 3rd and 4th days, 1 gm. in all. He also remained without symptoms. On January 26 he was reinoculated and in 14 days developed a typical primary lesion in which spironemata were found. A control *M. nemestrinus* was inoculated on the same day as the other monkey and man, but was not treated. In 14 days a typical framboesial nodule developed containing spironemata. A second inoculation on January 22 was without effect.

The experiment shows, writes the author, that stovarsol in a dose of 3·75 gm. given within 4 days prevented infection by an intensive inoculation with spironemata of yaws in an European of 66 kilos. Apart from slight nausea on the fourth day the patient experienced no unpleasant effect. The author advises further tests of stovarsol as a preventive of syphilis and yaws. In tertian malaria no preventive action of stovarsol could be shown.

A. G. B.

LEGER (André). **Le Stovarsol dans le Pian.**—*Bull. Soc. Path. Exot.* 1923. Nov. 14. Vol. 16. No. 9. pp. 635–636.

The excellent results obtained with stovarsol or "190" in syphilis and in amoebic dysentery (this *Bulletin*, Vol. 20, p. 712) and the fact that it is given by the mouth induced the author in Annam to try it for yaws. Ten patients in whose lesions the presence of *Spironema pertenue* had been demonstrated received the drug, 3 or 4 tablets of 0·25 gm., dissolved in water, daily for ten days. There were no symptoms of intolerance and the curative action was as rapid as that of arsenobenzol. From the 2nd or 3rd day the lesions dried up forming a scab under which cicatrization took place and the general condition improved remarkably. The author concludes that the merits of stovarsol are so great that it should come into use for prophylaxis.

A. G. B.

Tanon & Jamot. **Le traitement du pian par le stovarsol.**—*Rev. Méd. et Hyg. Trop.* 1924. Jan. Vol. 16. No. 1. pp. 18–23.

These authors find that stovarsol is an excellent remedy for yaws. It is quickly absorbed and well tolerated and cures at least as rapidly as neosalvarsan. Patients can be treated at their own homes. Two cases that had resisted neosalvarsan yielded to stovarsol. They give the drug to adults thus:—1st day, 2 tablets; 2nd, 3; 3rd, 4; 4th, none; 5th, 4; 6th, 3; 7th, 2, and the following week a tablet every 3 days. By the 5th day the lesions are completely dried up. Details are given of five cases.

A. G. B.

Benigno Velasco (C.). **Contribución al estudio clínico del pián.**—*Repert. de Med. y Cirug.* 1921. Sept. Vol. 12. No. 12. (No. 144.) pp. 647–675.

Ernst (John R.). **A Case of Yaws.**—*Proc. Med. Assoc. Isthmian Canal Zone.* 1920. Jan.-Dec. Vol. 13. Pts. 1 & 2. p. 98. With 1 plate.

Gislen. **Le pian (Framboesia tropica).**—*Arch. Méd. Belges.* 1923. June. Vol. 76. No. 6. pp. 464–472. With 2 figs.

SLEEPING SICKNESS.

SCHWETZ (J.). **La lutte contre la maladie du sommeil dans les districts du Kwango et du Kasaï (Congo belge), en 1920-1923.**—*Bull. Soc. Path. Exot.* 1924. Jan. 9. Vol. 17. No. 1. pp. 76–86. With 1 map. [2 refs.]

The author recalls that, after spending several months in the Kwango district, he published a report and pressed for the appointment of a Commission to investigate and treat sleeping sickness in that region [this *Bulletin*, Vol. 15, p. 381]. This Commission was appointed and Schwetz put in charge, and the present paper is a record of the work done during the first three years of its labours, viz., 1920-1923. The mission consisted of 3 doctors, 3 European sanitary inspectors and 30 native hospital attendants. Hardly had the work commenced before two members, a doctor and a European sanitary inspector, contracted sleeping sickness, and this reduced seriously the European staff during 1921. During 1922, the European staff was greatly strengthened and consisted of 5 doctors and 5 sanitary inspectors.

The district of Kwango and the adjacent part of Kasaï is practically unoccupied and unruly, and this proved, as the author previously surmised, a great obstacle to success in anti-sleeping sickness work. The population is fairly dense, but the people live widely dispersed in hamlets or even in isolated huts. On the arrival of the European, they hid themselves; no census of the population was available and the maps were quite inadequate.

It was consequently necessary to begin by concentrating the people into proper villages, by making a census and by preparing maps, and this work compelled the mission to limit its activities during the first year to an area of about 10,000 square kilometres and to the examination of some 70,000 natives. Another difficulty experienced was that of obtaining and training a sufficient number of native hospital assistants. Many of these were obtained and trained locally and by the end of 1922 the mission possessed 40 to 50 assistants capable of giving injections, all except 5 trained by members of the mission. During the first year only intramuscular injections of atoxyl were given, but later, as the assistants became more skilled, intravenous injections of atoxyl and emetic were administered.

The author next refers to the difficulties of diagnosis and quotes at length from his previous paper on this subject [*loc. cit.*]. The microscope was only used in special circumstances, and diagnosis, as a general rule, depended on gland palpation. Re-examination after treatment was also limited to gland palpation. If a treated patient was found on re-examination (in general a year later) still to have enlarged glands, he was considered not to be cured, even though his general state was good and trypanosomes could not be found. On the contrary, if the patient was in good condition and did not exhibit enlarged glands, he was considered to have certainly benefited from treatment, although not necessarily to be definitely cured.

Microscopic examinations were made in the case of 86 treated cases —half of which had been diagnosed before treatment by the microscope and the other half by gland palpation. The examination of gland juice was negative in every instance, but trypanosomes were found by the blood centrifugation method in three cases, all of whom had typical glands; in 9 others with typical glands the blood examination was

negative. Hence, from the prophylactic point of view, the author concludes that their real results are better than their figures, based on gland palpation, indicate. The curative result is, however, probably less satisfactory, as the cerebrospinal fluid was found to be altered in all the 86 cases, but it is noted that no examination of this was made before treatment.

The author at first attempted to work simultaneously in two or three territories, but shortage of staff prevented this, and until the end of 1922 he had to confine himself to a single territory, which he subdivided into several sections, each of which was put under the charge of a doctor and sanitary inspector. He notes that in the Belgian Congo there are 22 districts and that each district is divided into 6, 8, 10 or 12 territories, which, of course, vary in size, but approximate roughly to 100 km. × 100 km. Details are given of the method of work in the several sections—the examination of the population, the recording of cases, the issuing of tallies, the treatment of patients, and the arrangements made to ensure the re-visiting of the villages at regular intervals. The dose of atoxyl administered was about 1 gm. for an adult and ·5 gm. for a child, and the course given was 10 injections during a period of 2½ to 3 months. Later, when the atoxyl-emetic treatment was commenced, the length of the course of treatment did not exceed 1½ months.

During the first three years, the mission examined 8 territories with a population of 550,000 persons and treated 45,000 patients. Of the 8 territories only 3 had been re-examined previous to the author's departure in June 1923, but the others are in course of re-examination ; of the three re-examined, two have been done once and the third (Kikwit) twice. During re-examination a second course of treatment (10 injections) is given to all cases previously treated, even to those apparently cured, and a complete course of treatment is also given to any new cases discovered. At Kikwit, on the third examination a third and second course of treatment was given to cases discovered during the first and second examination, respectively, and a first course to new cases. The total result is that about 200,000 natives have been examined twice and 20,000 patients treated twice ; and 100,000 natives have been examined three times and 10,000 treated three times. In all, 850,000 examinations have been made and 75,000 courses of treatment, comprising 750,000 injections, given.

In a table the result of the examination and re-examination of the 8 territories is given. It was found that re-examination of Kandale showed 1 per cent. of persons infected as compared with 5·5 per cent. at the first examination : at Bulungu the figures were, respectively, 3·3 per cent. and 12·2 per cent. ; and at Kikwit 12·8 per cent. at the first examination, 9 per cent. at the second and 6 per cent. at the third ; the interval between the examinations was one year. The author remarks that the relatively poor results obtained in Kikwit are to be explained by the special difficulties of all kinds which were encountered during the first and second examination.

W. Yorke.

Van den Branden (F.) & Van Hoof (L.). **Fonctionnement du Laboratoire de Léopoldville pendant l'année 1922.**—*Ann. Soc. Belge de Méd. Trop.* 1923. Nov. Vol. 3. No. 2. pp. 157–180. With 6 plates & 1 graph.

During 1922, 9,381 men, women and children (residents, crews of ships and travellers) were examined at Leopoldville as regards try-

panosomiasis ; the number of gland punctures made was 2,569, and the number of blood examinations by the triple centrifugation method was 1,016 : these examinations resulted in the discovery of 196 cases of infection. The number of natives examined belonging to the Leopoldville district was 2,435, and 42 (1·7 per cent.) were found to be infected. At Madimba 17,000 natives were examined and 245 cases of the disease found.

W. Y.

Bulletin de l'Académie de Médecine. 1923. Nov. 20. Year 87. Vol. 90. 3rd Ser. No. 39. pp. 338-342.—**I. Sur un travail de M. Augagneur intitulé : Mouvement de la population en Afrique equatoriale française. Influence de la maladie du sommeil ; présenté au nom d'une Commission composée de : MM.** Louis Martin, Brumpt **et** Léon Bernard **rapporteur.**

It is generally accepted that equatorial Africa is being rapidly depopulated and that trypanosomiasis, spread as the result of colonization, is the principal cause of this depopulation ; the disease acts partly by the mortality which it causes and also by the decrease in the number of births for which it is responsible. Augagneur, who is not only a medical man, but also Governor General of French Equatorial Africa, has re-investigated this problem and the results of his enquiries do not support this general belief. He first concerned himself with the question whether the supposed depopulation has actually taken place. In 1921, Augagneur made as careful as possible a census of the population of French Equatorial Africa and found a total of 2,854,948 persons. The official estimate in 1913 was between 8 and 9 millions and the author concludes that if these figures were exact, the depopulation would have proceeded with such rapidity that the entire race would have disappeared within three years. Augagneur is of opinion for the following reasons that the population was never numerous.

1. The soil is poor and all the vegetables used are imported.

2. The improvidence and apathy of the natives prevent them from cultivating the ground and hence there are frequent famines and constant malnutrition.

3. The absence of hygiene and of clothes ; and the extreme frequence of acutely fatal pulmonary diseases, disorders of metabolism, severe enteritis, and intestinal worms.

4. Slave raiding by the coast negroes and in the interior by the Arab Sultans of Darfour and of the Ouadaï carries off the young and robust, and the reproductive element.

5. Incessant inter-tribal warfare.

6. Sleeping sickness.

7. Malaria.

These factors were always at work preventing increase in the population. Under the energetic influence of the Administration, the natives are compelled to cultivate the ground and famines are rare and less severe. The intestinal infections often related to harmful diet have, with the provision of proper food, lost part of their gravity. The clothing of the natives has only improved among those in contact with

Europeans, and the pulmonary diseases are less extensive than formerly. Slavery and inter-tribal warfare have completely disappeared and malaria is being dealt with. There remains trypanosomiasis, to which is attributed a preponderating part in producing mortality in Central Africa. AUGAGNEUR has analysed the numerous reports relating to sleeping sickness in the Colony and has reached the conclusion that it is at the moment impossible to determine the influence of the disease on the death rate and its effect on the total population.

W. Y.

HUOT (N. L.). **Rôle capital des conditions d'existence de l'indigène de la forêt équatoriale et, en premier lieu, du facteur alimentaire, dans les variations de gravité de l'endémie trypanique.**— *Ann. de Méd. et de Pharm. Colon.* Paris. 1923. May-June-July-Aug. Vol. 21 [22 *sic*]. No. 2. pp. 163–166.

During sleeping sickness work in the Doumé district of East Cameroons in 1921–1922, the author found endemic sleeping sickness presenting two very different forms : the one mildly endemic, 5 to 10 per cent. of the population infected, but mainly in apparent good health with little of the later stages of the disease and few deaths, not influencing appreciably the general death rate ; the other in foci clearly delimited, of a violently epidemic type, 50 per cent. of the population infected, much somnolence and heavy mortality. On comparing the conditions obtaining in the districts where the two types of the infection occur, it is found that in the mildly endemic areas the people are prosperous and well fed, and the conclusion is reached that where the population is properly fed those infected with sleeping sickness *do not die*. On the contrary, in the areas severely attacked it was always found that disturbed conditions existed, villages were abandoned, and the population dispersed into the bush and lived a semi-nomadic existence ; cultivation of crops was inadequate and the people were ill fed. In all the heavily infected districts political disorganization—the result of various factors, such as exactions of the chiefs, racial rivalries, truculence of certain sections of the population, failure to adjust taxation—has invariably preceded the epidemic and is not the consequence of the epidemic, but the cause of it.

The author comments on the rapidity with which the physique of the native changes when his diet becomes insufficient. His food consists almost exclusively of carbohydrates. The proportion of fats varies considerably ; it is abundant in the oil palm districts, but deficient where these are absent. In practically the whole equatorial forest zone, the native eats meat but exceptionally ; his food is almost exclusively vegetarian and he only remains in good health when he is able to compensate quantitatively its poor quality. Finally, the poor quality of the soil is rapidly impoverished by the cultivation of crops, and it is frequently necessary to change the site of the plantations, which means continual deforestations and clearing. If, for any reason, this essential work is neglected, food scarcity threatens, and inevitably the under-feeding which results will prepare the ground for the outbreak of a severe epidemic of trypanosomiasis.

The paper concludes with certain recommendations which the author bases on these considerations.

W. Y.

GEORGELIN. **Maladies endémiques et endémo-épidémiques constatées au Gabon pendant l'année 1921-1922.**— *Ann. de Méd. et de Pharm. Colon.* Paris. 1923. May-June-July-Aug. Vol. 21 [22 *sic*]. No. 2. pp. 209–215.

At the Libreville laboratory during the year 1921–1922 there were examined for sleeping sickness 2,529 natives and 99 were found to be infected. In Sector 10 the number of natives examined was 9,261, and 143 were found to be infected. Up to 30th September 1921 there had been recognised and treated 394 cases, and by 30th September 1922 the number had risen to 567. The patients were not only given sterilising injections from the point of view of prophylaxis, but were treated regularly, and 226 were admitted to hospital; 22 died during the year but others are greatly improved.

CLAPIER visited the Woleu-N'Tem district for a period of more than three months and found tsetse in most of the villages; the inhabitants are especially bitten whilst engaged in fishing, and this explains the large number of cases among women. Sixty-three cases were found in this district among the 1,792 persons examined.

During the year, CLAPIER has conducted observations on the therapeutic value of oxyaminophenylarsinic oxide (189). In doses of 2 to 4 cgm. per kilo of body weight the drug causes disappearance of parasites from the blood and glands within 10 hours. With intermittent treatment sterilization may persist for 4 months or more after cessation of treatment, but relapses are not rare in both early and late cases even after large doses.

In the Haut-Ogooué district 13,695 natives were examined and 2,513 new cases found.

W. Y.

GAMINARA (Ángel). **Estudio experimental sobre *Schizotripanum cruzi* y enfermedad de Chagas en el Uruguay.** [Experimental Study of *Schizotrypanum cruzi* and Chagas' Disease in Uruguay.]— *Anales de la Fac. de Med.* Montevideo. 1923. Mar.-Apr. Vol. 8. Nos. 3-4. pp. 311–359. With 7 plates. [93 refs.]

Although Uruguay has a temperate climate certain tropical diseases are met with; among these is Chagas' disease. *Schizotrypanum cruzi* is widely distributed in South America owing to the prevalence of its intermediate hosts, and at least two species of these are found in Uruguay, mainly in the north-east and centre of the county, viz., *Triatoma infestans* Klüg, 1834, and *T. rubrovaria* Blanch., 1843.

The Uruguayan Triatomas were found to be infected with intestinal flagellates corresponding in all respects to the developmental forms of *Schizotrypanum cruzi* in the bug as described by CHAGAS. Inoculation of experimental animals with these flagellates resulted in infections indistinguishable from those produced by *Schizotrypanum cruzi*. The infected animals showed in their cardiac and skeletal muscles the typical leishmania-like forms of the parasite and as a result of his studies the author concludes that the parasite is identical with *S. cruzi*.

Although the trypanosome has not as yet been found in human beings, probably because the blood of suspected cases has not been examined in the acute stage, nevertheless, the myxoedematous, cardiac and nervous types of the disease have been recorded clinically. (The paper is illustrated by coloured plates and microphotographs which indicate clearly that the morphology of the parasite is that of *Schizotrypanum cruzi*.)

W. Y.

Soto (Jaquin). [**Un nuevo caso de tripanosomiasis en El Salvador.**]—*La Clinica.* San Salvador. 1922. Vol. 1. Part 6. No. 5, 6 & 7. [Summarized in *Arch. f. Schiffs- u. Trop.-Hyg.* 1924. Feb. Vol. 28. No. 2. p. 78.]

A second case of human trypanosomiasis has been found by Segovia in Salvador. The parasite, as in the first case, resembled *T. cruzi*. The clinical picture in both cases was that of chronic malaria. It is possible that the disease is a new one and that morphological differences may exist between the parasite and *T. cruzi*; further observations are to be made. W. Y.

Van den Branden (F.) & Van Hoof (L.). **Résultats de l'observation de malades trypanosomés traités au Tryparsamide "A 63."**—*Bull. Soc. Path. Exot.* 1923. Oct. 10. Vol. 16. No. 8. pp. 606–615. [2 refs.]

The patients in question were treated by Dr. Louise Pearce at Léopoldville in 1921 (*Jl. Exper. Med.*, Vol. 34, Dec., p. 104; this *Bulletin*, Vol. 19, p. 136).

The first portion relates to the treatment of cases of trypanosomiasis in which the cerebrospinal fluid was normal, and the results obtained in a series of 20 such cases are given in detail. The duration of sterilization obtained by a single dose of from 2 gm. to 3 gm. of the drug varied from 17 days to 13 months: those who relapsed were re-treated. All the twenty cases have apparently been cured and the total amount of the drug given to them varied in the individual cases from 2 gm. to 54 gm. The observation period from the end of treatment varied from 6 months to 2 years and 7 months.

Details are given of the treatment of 35 cases in which the cerebrospinal fluid was altered. In 11 cases the lymphocytosis decreased as the result of treatment, as is shown in Table I.

TABLE I.

Lymphocytosis before treatment.	Doses received.	Lymphocytosis after treatment.
1. 17·5 to the cmm.	9 g.	7·5 to the cmm.
2. 70 to the cmm.	65 g.	75 [? 7·5] to the cmm. large mononuclears.
3. 35 to the cmm.	46 g.	8·7 to the cmm.
4. 12·5 to the cmm.	24 g.	6·5 to the cmm.
5. 305 to the cmm. large mononuclears and mulberry cells.	52 g.	6·8 to the cmm.
6. 247 to the cmm. large mononuclears and mulberry cells.	62 g. 500	5 to the cmm. large mononuclears.
7. 387 to the cmm.	32 g.	5 to the cmm. large mononuclears.
8. 15 to the cmm.	19 g.	9·3 to the cmm.
9. 117 to the cmm. large mononuclears and mulberry cells.	31 g.	1·5 to the cmm. large mononuclears.
10. 327 to the cmm. large mononuclears and mulberry cells.	51 g.	5 to the cmm. large mononuclears.
11. 19 to the cmm.	16 g.	10·3 to the cmm. large mononuclears.

In three patients the lymphocytosis increased as is shown in Table 2.

TABLE 2.

Lymphocytosis before treatment.	Doses received.	Lymphocytosis after treatment.
1. 7·5 to the cmm.	7 g.	24 to the cmm.
2. 5·3 to the cmm.	12 g.	8 to the cmm.
3. 7·5 to the cmm. large mononuclears.	32 g.	20 to the cmm. large mononuclears.

Three cases, the cerebrospinal fluid of all of which exhibited a high degree of lymphocytosis (viz., 100 to 450 per cmm.), died at the end of their course of treatment, which varied from 32 gm. to 36 gm. of tryparsamide.

In 16 patients the cerebrospinal fluids became normal as regards lymphocytes, as is shown in Table 3.

TABLE 3.

Lymphocytosis before treatment.	Doses received.	Lymphocytosis after treatment.
1. 52 to the cmm. large mononuclears.	40 g.	1·2 to the cmm.
2. 32 to the cmm.	48 g.	1·5 to the cmm.
3. 7·5 to the cmm.	18 g.	1·2 to the cmm.
4. 285 to the cmm. large mononuclears and mulberry cells.	60 g.	2·5 to the cmm.
5. 35 to the cmm.	35 g.	1·8 to the cmm.
6. 22 to the cmm.	47 g.	0·9 to the cmm.
7. 92·5 to the cmm.	48 g.	1·5 to the cmm.
8. 47 to the cmm.	60 g.	1·5 to the cmm.
9. 10 to the cmm.	32 g.	1 to the cmm.
10. 7·5 to the cmm.	7 g.	Normal.
11. 47 to the cmm.	22 g.	0·6 to the cmm.
12. 20 to the cmm.	36 g.	4·6 to the cmm.
13. 15 to the cmm.	40 g.	3 to the cmm.
14. 37·5 to the cmm.	60 g.	2·1 to the cmm.
15. 15 to the cmm.	53 g.	0·9 to the cmm.
16. 20 to the cmm.	19 g.	1·5 to the cmm.

In the last two cases the lymphocytosis fell to practically normal, viz., from 20 per cmm. and 300 per cmm., respectively, to 2·1 per cmm. and 6·5 per cmm. after having received 82·7 gm. and 28 gm. of the drug.

The general summary is that in patients with normal cerebrospinal fluid the number of immediate successes appears to be 100 per cent., but the authors add that they are inclined to believe that they had to deal with a fortunate series of cases. Of those in whom the cerebrospinal fluid was changed, 3 (8·5 per cent.) died rapidly after the end of treatment ; 16 (45 per cent.) exhibited 6 months to a year after treatment a normal cerebrospinal fluid, 3 showed an increase in lymphocytosis, in 2 the fluid became almost normal, and in 11 the lymphocytosis diminished appreciably, but the cerebrospinal fluid did not become normal.

The conclusion is that tryparsamide, which can be administered either into the muscle or veins, seems to be the most active arsenical

preparation known in the treatment of trypanosomiasis. It, however, unfortunately has the great disadvantage of provoking in certain cases visual troubles and may sometimes produce blindness.

W. Y.

BROWN (Wade H.) & PEARCE (Louise). **Tryparsamide : its Action and Use.**—*Jl. Amer. Med. Assoc.* 1924. Jan. 5. Vol. 82. No. 1. pp. 5–9. [19 refs.].

In this paper the authors have attempted to bring together the essential points bearing on the subject of the action and use of tryparsamide, and to discuss them in a manner that will be helpful to those who contemplate the use of this drug.

Tryparsamide was synthesized by JACOBS and HEIDELBERGER and its biological action studied by BROWN and PEARCE in 1915 (this *Bulletin*, Vol. 15, p. 390), but the first publication did not appear until 1919, and no systematic clinical investigation could be undertaken until 1919–1920, when work was started both in trypanosomiasis and syphilis.

Action on the Animal Organism. Very slight local irritation is produced by subcutaneous or intramuscular injections, and in view of the large arsenic content (25·32 per cent.), the dose which can be administered to laboratory animals by any route is very large ; there is also a comparatively narrow zone of separation between the lethal dose and the dose which produces no apparent functional or organic impairment ; and furthermore, after the administration of a toxic but sublethal dose, all manifestations of intoxication develop promptly, while recovery is both rapid and complete. Doses slightly below the lethal level can be given at weekly intervals over a long period without cumulative toxic effects, but actually with increased tolerance of the organism, so that eventually the dose may be raised to a level well beyond that which is ordinarily fatal. The drug produced a remarkable stimulative effect on the animal organism in both normal and diseased animals ; even small doses lead to an immediate improvement in general appearance, activity and weight of treated animals. The only unfavourable features of the action of tryparsamide noted were an irregular tolerance on the part of different animal species and the occurrence of peculiar nervous symptoms, including amblyopia.

Therapeutic action. The trypanocidal index tested in mice is fairly good, but by no means equal to that of a number of well known substances, such as arsphenamin and neo-arsphenamin, and is distinctly inferior to that of arsenophenylglycin or even arsacetin. While, however, therapeutic tests on mice and rats may give a fairly accurate indication of what may be termed potential trypanocidal activity, they do not necessarily convey any idea of actual curative value, since the disease in these animals is of a wholly different character from that in man or the larger domestic animals ; the rabbit is from this point of view a more satisfactory test animal, since the experimental infection shows practically all the conditions that characterize trypanosome infections in man, including involvement of the central nervous system. Tryparsamide proved to be highly effective in the treatment of infected rabbits. If a drug cures a well-developed infection in the rabbit in the same unit dose as is required to sterilize the blood, it is obvious that it must possess high therapeutic penetrability or else it could not exert a therapeutic effect in all parts of the body comparable

to that displayed in the circulating blood. It is this feature of the action of tryparsamide which more than any other finally led to its use in trypanosomiasis and neurosyphilis. Its spirocheticidal action, however, is distinctly less than its trypanocidal action.

The paper concludes with an analysis of the factors concerned in the action of tryparsamide in trypanosomiasis and syphilis.

The following summary is given :—

" A study of the action of tryparsamide on the animal organism and on experimental infections produced by trypanosomes and spirochaetes showed that, although the drug exhibits no unusual parasiticidal effect, it possesses properties of action which peculiarly adapt it to the treatment of trypanosomiasis and to certain classes of syphilitic infections, especially those that call for the use of drugs with high penetrability as well as those that might be influenced favourably by reinforcement of processes of natural resistance. The use of the drug is advocated on this basis rather than on the basis of high potential parasiticidal action."

W. Y.

Fourneau (Ernest), Tréfouël (Jacques), Tréfouël, Mme., & Vallée (Jean). **Sur une nouvelle série de médicaments trypanocides.**— *C. R. Acad. Sci.* 1924. Feb. 11. Vol. 178. No. 7. pp. 675–676.

——, ——, ——, & ——. **Recherches de chimiothérapie dans la série du 205 Bayer. Urées des acides aminobenzoylaminonaphtaléniques.**— *Ann. Inst. Pasteur.* 1924. Feb. Vol. 38. No. 2. pp. 81–114. [86 refs.]

The first of these papers is practically a summary of the second, which, after reviewing the literature dealing with the drug " Bayer 205," discusses its chemical composition. The authors believe that they have discovered the formula of " Bayer 205," viz., the urate of meta-aminobenzoyl-para-methyl-meta-aminobenzoyl-l-aminonaphthalene-trisulphate of sodium -4-6-8. Owing to the difficulty experienced in obtaining a sufficiency of " Bayer 205," the authors state that they are not absolutely certain. They have prepared a substance which they designate " 309 " and believe to be identical with " Bayer 205."

" Bayer 205 " belongs to a series of substances of great interest from the biological and bacteriological points of view. It opens up new fields, and if it does not fulfil all the hopes aroused from laboratory work, yet it is certain to play an important part in the treatment of trypanosomiasis. It has the grave objection of producing a more or less permanent nephritis, and research must be directed towards eliminating from the compound the substances responsible for this toxic action.

Among the series of urates studied by the authors some compounds act (in the mouse) less efficaciously than " 309," but cost is less and it is possible they may be more active on large animals. This is the case with the urate of meta-aminobenzoyl-methyl-aminobenzoyl-acid K (" 309 " in which the acid B is replaced by the acid K). It is intended to test this preparation in Africa.

W. Y.

Lange (L.) & Kersten (H. E.). **Weitere Untersuchungen ueber "Bayer 205."** [Further Observations on " Bayer 205."—*Cent. f. Bakt.* I. Abt. Orig. 1924. Feb. 15. Vol. 91. No. 5. pp. 323–330. [5 refs.]

The authors point out that there exist in the literature certain discrepancies regarding the toxicity of the drug for mice ; Haendel

& JÖTTEN give 18–20 mgm. as the toxic dose, but they add that occasionally as much as 30 mgm. is tolerated, MAYER and ZEISS state that the toxic dose is about 10 mgm., whilst, according to MIESSNER and BERGER, it is between 10 and 15 mgm. The authors themselves re-investigated the subject and came to the conclusion that the toxic dose is about 18–20 mgm. and that even very old solutions (41 months) show only a slight increase in toxicity.

In a series of therapeutic experiments, it was found that old solutions of the drug were as efficacious as freshly made solutions.

As a prophylactic, it was found that a dose of 1 mgm. protected a mouse for 47 days, even when it was inoculated twice, *e.g.*, on the 28th and 47th days. Animals which had been cured by a dose of 1 mgm. on each of two consecutive days showed a certain, but not complete, resistance when re-inoculated 114 and 117 days respectively afterwards. After periods of 143 and 171 days, no increase of resistance, as compared with normal animals, was observed.

Reference is made to the fact that KLEINE and FISCHER (this *Bulletin*, Vol. 20, p. 317) explained the observation that "Bayer 205" acts differently in different trypanosome species and in the same species in different hosts on the hypothesis that in naturally infected animals the parasites find their most favourable medium for growth, and that under these conditions they are less sensitive to the action of drugs, and consequently the host is less easily sterilized. Lange and Kersten believe that this explanation is not correct, for they hold that it is in those animals where the parasite quickly swarms in the blood that it finds its most suitable medium and not in hosts where the infection runs an extremely chronic course, producing little, if any, evidence of disease, as in *T. lewisi* of the rat and *T. caprae* of goats; in such conditions the infection can be said to be in a state of biological equilibrium.

Boundless growth and increase of the parasites as must occur in an optimum medium would lead soon to a fatal end, either for the animal or for the man. The authors cannot, therefore, agree with KLEINE and FISCHER that in the above mentioned cases, the trypanosomes find an optimum medium, but they hold that the contrary is far more likely to be the case. They intend in a further paper to go thoroughly into this matter, which is not without significance, both from the theoretical and practical points of view. A boundlessly increasing, highly virulent parasite, during a heightened extremely active metabolism, seizes upon everything in its vicinity which, so to speak, comes its way, whilst an attenuated strain behaves in a much more inert manner.

The authors find support for this view in the experiments published by HAENDEL and JÖTTEN to the effect that trypanosomes in the blood of a mouse which had been in only short contact with "Bayer 205" immediately lose their power of growth, so that when once more introduced into an optimum medium by inoculation into a fresh mouse they are no longer capable of producing infection.

W. Y.

KLEINE (F. K.). **The Action of Bayer "205" in Trypanosomiasis.**—*Lancet.* 1924. Feb. 23. pp. 384–385. [1 ref.]

This paper deals with substantially the same matter as previously recorded elsewhere and already noticed here. [This *Bulletin*, Vol. 20, p. 317 and Vol. 21, p. 56.]

W. Y.

Dervish (J.) & Laigret (J.). **Contribution à l'étude des modes de disparition des Trypanosomes des souris sous l'action de divers médicaments actifs ; émétique, 189, 205 Bayer.**—*Bull. Soc. Path. Exot.* 1923. Dec. 12. Vol. 16. No. 10. pp. 770–781. With 13 figs.

This paper is divided into two portions. The first gives the results obtained with " Bayer 205 " in experimental trypanosomiasis of the mouse and the second the result of a detailed study of the morphological alterations observed in the blood of animals treated with " Bayer 205," with tartar emetic, and with 189, respectively. The parasites used were *T. brucei*, *T. equiperdum*, *T. evansi*, *T. rhodesiense*, *T. lanfranchii* and *T. pecaudi*.

The conclusions regarding the first part of the work are that Bayer 205 is a strongly trypanocidal drug. The results confirm those of previous workers.

With regard to the second question, the authors write that the disappearance of trypanosomes is preceded by sundry morphological alterations of which none is, strictly speaking, characteristic of the therapeutic agent injected, but the grouping of these changes is sufficiently characteristic to be summarized as follows :—

With emetic there is a predominance of rounded up forms ; they appear early and their number increases progressively up to the total disappearance of the trypanosomes ; granular changes and degenerative vacuolation are late and but little marked. Phagocytosis of the trypanosomes by leucocytes is not uncommon.

With " Bayer 205 " the dominant change is, on the contrary, granular degeneration. It precedes all the others, and the rounded up forms are rare. Between the fourth and the sixth hours there is abundance of divisional forms and of forms with two nuclei without division of the blepharoplast. The degenerative vacuolation is more marked than with the other drugs.

The drug " 189 " shows an intermediate action approaching rather to that of emetic ; rounded up forms are numerous, granular degeneration is late and never so generalized as with " Bayer 205." There is nothing peculiar in the mode of division of the trypanosomes.

Mesnil adds a note concerning the action of " Bayer 205 " on *T. gambiense* isolated in January, 1920, from a patient and preserved in guineapigs. Details are given concerning 8 guineapigs inoculated with the trypanosomes in October 1922 ; 6 were treated at different periods of the infection and 2 were kept as controls. Of the 3 animals treated sufficiently early, 2 were cleared of trypanosomes by a double injection of the drug. The third, which appeared to have tolerated the injection, suddenly died, without doubt from a secondary infection. The other 3 animals treated later did not appear to tolerate the dose injected. Three dogs were also inoculated in October 1920 ; two were sterilized by a single injection of the drug and the third was kept as a control.

Mesnil also summarized a few observations made by Blanchard and Lefrou at Brazzaville on the treatment of infected natives. Three patients in the first stage of the disease were treated in September 1922 : the first had 4 injections (3 gms. in all) and the other two a single injection, one of 1 gm. and the other of ·5 gm. ; there is no relapse to date. Two patients in the second stage of the disease with changed spinal fluid were also treated. The first received 4 injections (3 gms. in all) in September 1922, and remained free from parasites until

March 1923, when he disappeared. The second had a single injection of 1 gm. in October 1922, and relapsed in December of the same year.

W. Y.

SHINTAKE (Tami). **Ueber die Beeinflussung der Vermehrung der Trypanosomen durch "Bayer 205."** [The Influence of "Bayer 205" on the Multiplication of Trypanosomes.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1923. Vol. 27. No. 12. pp. 433–444.

Reference is made to the previous work of MAYER and ZEISS and of HESSELBACH on this subject [this *Bulletin*, Vol. 17, p. 334, and Vol. 20, p. 325]. The author has re-investigated the question and has arrived at the following conclusions:—

After treatment of infected mice and rats with "Bayer 205," and more especially with the smallest active doses, there is a marked stimulation of division which is indicated by the increase of divisional forms seen in the blood of the treated animals as compared with those found in the blood of heavily infected untreated animals.

This process appears to occur chiefly in the acute infections of small animals.

The division forms disintegrate before the single forms.

In treatment with inactive doses—especially in relapses—this reaction of division stimulation did not appear to take place in the author's experiment.

It remains to be seen whether, in chronic natural infections, with periodic swarming of the trypanosomes, there exists a greater activity of the drug during these periods—in contradistinction to the afebrile periods with few trypanosomes in the blood—which would be dependent on the greater sensitiveness of the division forms.

W. Y.

LEVADITI (C.) & NICOLAU (S.). **Mode d'action du bismuth dans les trypanosomiases et les spirilloses.**—*C. R. Acad. Sci.* 1923. Apr. 23. Vol. 176. No. 17. pp. 1189–1192. [5 refs.]

Reference is made to previous work of Levaditi and YAMANOUCHI, which showed that atoxyl, although incapable of destroying trypanosomes *in vitro*, becomes strongly trypanocidal after contact at 37° C. with fresh extract of liver. The drug becomes transformed into trypanotoxyl, which does not act on strains of trypanosomes resistant to arsenic. These experiments indicate that certain drugs employed in the treatment of trypanosomiasis and spirillosis exercise their parasiticidal action after being subjected to more or less profound modifications in the organism. In the present paper, the authors have enquired whether bismuth behaves in the same manner. They found that a 2 per cent. solution of tartrobismuthate of sodium and potassium, which itself is inactive *in vitro*, becomes strongly parasiticidal when previously allowed to stand in contact with extract of liver, and, to a less degree, with that of other organs. They call this active body bismoxyl. The substance in the liver which activates the drug is resistant to heat. Bismoxyl differs from trypanotoxyl in that *in vitro* it destroys not only trypanosomes but spirochaetes; this difference throws light on the superiority of bismuth over arsenic in the treatment of spirochaetosis. Other salts of bismuth were treated in the same way, giving rise to bismoxyl. Experiments showed that the quantity of bismoxyl formed depends on the quantity of organ extract and not on the concentration of the bismuth salt. If a mixture of fresh extract of

liver and a soluble bismuth salt (in the most favourable proportions) is preserved for 4 hours at 37° C., it is noticed that the mixture becomes progressively bleached and turbid. It was found that it was this precipitate of proteid substance which possessed the parasiticidal power. Apparently, proteid material of the extracts enters into the constitution of the active bismuth derivative to form a toxalbuminous bismuthate analogous to the toxalbuminous arsenical derived from atoxyl. In the presence of spirochaetes or of trypanosomes this toxalbumin is, without doubt, absorbed by the parasites and kills them. The spirochaeticidal properties of the toxalbuminous bismuthate (bismoxyl) become attenuated when heated towards 90° C. and disappear after heating at 100° C. for 10 minutes. Bismoxyl in contradistinction to trypanotoxyl has a curative action in human and experimental syphilis.

W. Y.

PONSELLE (A.). **Essai d'immunisation contre les trypanosomes pathogènes.**— *Ann. Parasit. Humaine et Comparée.* Paris. 1923. June. Vol. 1. No. 2. pp. 159–166. With 2 figs. [15 refs.]

The author summarizes the various attempts made to prepare vaccines for the treatment or prophylaxis of trypanosomiasis and points out that practically all efforts were of no avail and that the few good results claimed have not been confirmed.

The author's attempts at the production of a vaccine consisted in adding to the blood of a nagana mouse, in the last stage of the infection, a solution consisting of a mixture of monobasic and dibasic phosphates in such a proportion as to result in a definite concentration of hydrogen ions. He used for the preparation of this solution very pure phosphates prepared according to the method of SÖRENSEN for the colorimetric estimation of the concentration of the hydrogen ions and made up his solution according to the following formula:—

Monopotassium phosphate (PO^4KH^2)	1·80 gm.
Disodium phosphate ($PO^4Na^2H2H^2O$)	0·20 gm.
Water (doubly distilled)	100·00 cc.

This solution is distributed in a series of tubes, 2·5 cc. in each and sterilized at 115° C. for 20 minutes. A nagana mouse in the last stage of infection is killed by strangulation and its blood aspirated from the heart under aseptic precautions; generally about ·5 cc. is obtained and added immediately to one of the tubes containing 2·5 cc. of the phosphate solution and allowed to stand at 20° C. for 20–24 hours. The contents of the tubes are then agitated and the vaccine is ready for use.

Intraperitoneal injection of 0·1 cc. of this vaccine into a mouse produced no reaction; 4 or 5 days later the animal's blood agglutinated nagana blood, giving rise to the formation of beautiful rosettes and often paralysis of the trypanosomes. When mice treated in this manner were inoculated 8 to 10 days later with 0·05 cc. of a suspension of nagana blood containing 4 trypanosomes to a 1/12th inch objective microscope field many (70 per cent. of young animals) proved resistant, whilst the controls died in 5 to 6 days after inoculation.

W. Y.

Bassett-Smith (Percy). **Naval Medical History of the War. Section of Tropical and Sub-tropical Medicine. Part II.** (i) **Trypanosomiasis ;** (ii) **Kala Azar.**——*Jl. Roy. Nav. Med. Serv.* 1923. July. Vol. 9. No. 3. pp. 197–203. With 3 charts.

Chagas (Carlos). [In Portuguese and English.] **Descoberta do** *Tripanozoma Cruzi* **e verificação da Tripanozomiase Americana. Retrospecto Historico. The Discovery of** *Trypanosoma Cruzi* **and of American Trypanosomiasis. Historic Retrospect.**—*Mem. Inst. Oswaldo Cruz.* 1922. Vol. 15. No. 1. pp. 67–76 [Portuguese] ; 3–11 [English].

Morgenroth (J.) & Freund (R.). **Ueber die Wirkungsweise von "Bayer 205" bei der experimentellen Trypanosomeninfektion der Maus.** [On the Mode of Action of "Bayer 205" in Experimental Trypanosomiasis of the Mouse.]—*Klin. Woch.* 1924. Jan. 8. Vol. 3. No. 2. pp. 53–55. [7 refs.]

BLACKWATER FEVER.

THOMSON (J. G.). **Preliminary Report on the Results of Investigations into the Causation of Blackwater Fever in Southern Rhodesia. Presented to the Legislative Council, 1923.**—7 pp. With 2 Charts. 1923. Salisbury, Rhodesia: Govt. Printer.

The following are the conclusions :—

"1. The type of malaria which predominates in Southern Rhodesia is the pernicious type (synonyms—bilious remittent fever, malignant tertian, aestivo-autumnal, or sub-tertian fever). This forms 96 per cent. of the cases and the parasite is *Plasmodium falciparum*.

"2. The sexual forms of this parasite are comparatively rare amongst adult natives and adult Europeans, but are extremely common amongst native children and also in young European children.

"3. The curves of malaria and blackwater fever represented graphically show a definite co-relationship over a period of ten years. This is so definite that the evidence of the diseases being the same seems conclusive, especially when taken in conjunction with the microscopic findings.

"4. In Southern Rhodesia during the years 1922 and 1923 all blackwater fever cases examined before the actual onset showed parasites in the peripheral blood. As the parasites as a rule disappear from the peripheral blood with the onset of blackwater, many cases showed no parasites, but all *post-mortem* examinations obtained in such cases showed definite evidence of malaria.

"5. In over 150 cases of blackwater fever a history of repeated attacks of malaria was obtained.

"6. In all cases of blackwater examined a history was obtained of inefficient and irregular quinine treatment.

"7. Blackwater fever is common amongst the poorer classes, and occurs in those who take no precautions or are careless as regards precautions against the attacks of mosquitoes in malarious districts. This is one of the most obvious factors which I have been able to elucidate from personal visits to the houses in which blackwater fever patients had resided. It is specially associated with those occupations which expose to infection—for example, transport drivers and prospectors.

"8. The disease ought not to be so common amongst farmers, women and children who are living in fixed homesteads, and its occurrence amongst these is due to bad housing, the improper use or failure to use mosquito nets, as well as to lack of attention to the breeding of mosquitoes in the immediate neighbourhood of their houses.

"9. The commonest anopheline is *Anopheles costalis*, which seems to avoid large towns which are well sanitated, but this mosquito occurs in very large numbers in the rural districts of the whole of Southern Rhodesia.

"10. In conclusion, there is no doubt from these researches in this country that the prevention of malaria by every known method will reduce blackwater fever to a minimum. The Government of this country, after careful consideration of all the factors placed before them, may devise certain methods for the amelioration of this condition."

W. Yorke.

BLANCHARD (M.) & LEFROU (G.). **Spirochètes dans la fièvre bilieuse hémoglobinurique et pseudo-spirochètes du sang.**—*Bull. Soc. Path. Exot.* 1923. Dec. 12. Vol. 16. No. 10. pp. 726–729. [9 refs.]

This paper is a rejoinder to that of THOMSON [this *Bulletin*, Vol. 21, p. 64]. The authors state that the question of pseudo-spirochaetes is not new, and that it is not surprising that in the deposit of the third centrifugation pseudo-spirochaetes are found. They themselves have

seen in the blood of blackwater cases and in that of healthy individuals more or less thick elongated filaments simulating spirochaetes, especially C or S shaped forms, but these are never found in the numbers of which THOMSON writes. The bodies found by the authors in blackwater fever [this *Bulletin*, Vol. 20, p. 353] had nothing to do with pseudo-spirochaetes; in addition to the C and S shaped forms, typical forms with three or four very regular undulations of equal amplitude, sharply coloured, and identical in all respects with the icterohaemorrhagic spirochaetes, and in particular exactly similar to the spirochaetes found in the natives suffering from infectious jaundice. These spirochaetes are never found in normal persons. On the other hand, they are not found in all haemoglobinurics. Up to date 10 cases have been examined and spirochaetes found in only four. The authors do not consider that these elements, which are so clearly delimited, can be artifacts, because the technique was always the same, and they cannot conceive why they should appear with such inconstancy and in such quantity in certain cases.

W. Y.

KRITCHEWSKY (I. L.) & MURATOFFA (A. P.). [**On the Pathogenesis of Haemoglobinuria in Malaria.**]— *Vratchebnoye Obozreniye* (*Medical Review*). Berlin. 1922. May 15. Vol. 2. No. 5. pp. 203–206. [In Russian.]

—— & ——. **Zur Hämoglobinurie-Pathogenese bei Malaria.**— *Ztschr. f. Immunitätsf. u. Experim. Therap.* I. Teil. Orig. 1923. Oct. 10. Vol. 38. No. 1/2. pp. 38–56. [8 refs.]

The following summary is given :—

1. Haemoglobinuria in malaria is in great part evoked through the combined action of quinine and the lipoid substances of the organism.

2. When added to human serum quinine acts haemolytically *in vitro* on human erythrocytes. Just as in the case of snake venom, quinine is activated by heated as well as by unheated serum. The substance which activates quinine is not destroyed at 56° C. or 62° C.

3. Besides substances which aid in haemolysis human serum also contains those which inhibit it.

4. To the activating substances lecithin undoubtedly belongs; this substance even in quite minimal doses induces the quinine haemolysis *in vitro*.

5. In experiments *in vitro* individual variations in the erythrocytes appear quite sharply, the red cells being susceptible to haemolysis in different degrees.

6. Cholesterin, which inhibits the haemolytic action of snake venom + lecithin, exerts no noticeable inhibition of the haemolysis due to quinine + lecithin.

7. Quinine + lecithin becomes fixed to the red stroma.

8. Substances which activate quinine haemolysis and those which inhibit it are found not only in the blood serum, but also in cells.

9. The individual appearance of haemolysis in malaria is connected on the one hand with the individual peculiarities of the erythrocytes, and on the other hand with peculiarities of the serum, that is with the different lipoid content of the red cell stroma and blood serum.

10. In certain individuals suffering from malaria, or various other diseases, an increased lipoid content is to be expected, and this gives rise to haemolysis on quinine administration.

Climate and other conditions may well exert an influence on lipoid metabolism.

11. Quinine haemolysis is a physico-chemical phenomenon which expresses itself in modification of the degree of dispersion of the colloids of the erythrocyte protoplasm. Quinine calls forth *in vitro* the changes of the dispersion degree of the protoplasma colloids.

12. The toxic action of quinine is of itself insignificant; it appears only when the content of the quinine activating lipoid substances is raised.

13. The toxic action of all poisons is related to a disturbance of the normal dispersion degree of the protoplasma colloids.

14. It is to be presumed that the poisons which exhibit no incubation period are able to exert their effect without any activating substances. In cases of poisons with incubation period, the time is probably occupied by the accumulation of the activating substances.

W. Y.

HAMET. **Un cas de fièvre bilieuse hémoglobinurique à répétition**—*Arch. Méd. et Pharm. Nav.* 1923. Nov.–Dec. Vol. 113. No. 6. pp. 505–511.

Details are given of a case of chronic malaria contracted in Senegal, the subject of which suffered from repeated (thirteen) attacks of blackwater fever during the year following his return to France. A shorter account is also given of a second case in which the attacks of blackwater fever took place six months after repatriation.

W. Y.

PARROT (L.). **Accès mortel de fièvre bilieuse hémoglobinurique chez un indigène algérien**—*Arch. Inst. Pasteur d'Algérie.* 1923. Dec. Vol. 1. No. 4. pp. 607–608.

RAND (R. F.) **Prophylaxis of Malaria and Blackwater Fever.** [Correspondence.]—*Brit. Med. Jl.* 1924. Jan. 12. pp. 85–86.

SPENCER (H. A.). **Blackwater or Haemoglobinuric Fever; a Case occurring upon the Middelvelt.**—*S. African Med. Rec.* 1924. Jan. 26. Vol. 22. No. 2. pp. 28–32. With 1 chart.

MISCELLANEOUS.

MACFARLANE (N. M.). **Some Observations on 28 Years' Medical Practice in an African Native Territory.**—*S. African Med. Rec.* 1923. Nov. 10. Vol. 21. No. 21. pp. 492–496.

This is a story of Basutoland, a country rather more than half the size of Ireland, and having a native population of about 200,000. Once upon a time it was under the Cape ; then there were only 2 medical officers in the country. In 1884 it came directly under the Imperial Government, and in 1893, when the author first went there, the profession was represented by 5 medical officers and two dispensaries. In 1921 there were 12 medical officers, 4 well-equipped and well-staffed hospitals having accommodation for 125 in-patients, a cottage hospital of 8 beds, and a Leper settlement with a European staff, a capacity for 750 inmates, and actually providing for 500. In that year the number of out-patients treated at hospitals and dispensaries was 39,147 ; of hospital in-patients 2,288 ; of major operations 516 ; and of minor operations 1,752.

The author tells us that although the Basutos are a hardy lot of hill men, they have a lot of sickness ; and that although at first they were extremely reluctant to embrace the benefactions offered by British surgery, they are now eager for treatment. They bear operations well, and are good patients—obedient and entirely tractable. The prevalent diseases are syphilis, gonorrhoea, and gastro-intestinal disorders, the first two being placed by the natives to the account of the white man. Syphilis, though quite as common, is not now so terribly destructive as it was 28 years ago ; though (from the prevalence of gonorrhoea) it cannot be assumed that the Basutos are distinguished for continence, yet from the fact that in the course of 28 years and observations of thousands of cases he has encountered only two primary syphilitic lesions of the genitalia, the author is of opinion that this disease is spread chiefly by cooking and drinking vessels and by clothing and bedding. As sequelae of gonorrhoea tubal and ovarian disease is common, and sterility—a dreadful reproach in Basutoland—is becoming frequent. Gastro-intestinal disorders seem to be attributable to a monotonous diet of mealie-meal and millet, and occasional gorgings of meat ; but vegetables of various kinds are now being cultivated. Appendicitis occurs, but may perhaps be explained by surgical opportunity. Respiratory diseases are not common, but pneumonia is a fatal disease. Smallpox was very much prevalent formerly, but has been practically suppressed by vaccination, to which the Basutos were easily and completely reconciled. Measles, scarlatina, mumps and whooping-cough occur, and of late typhus has appeared, though the cases have been of a mild nature.

A. Alcock.

BRUMPT (E.) & JOYEUX (Ch.). **L'assistance médicale indigène aux travailleurs noirs africains.**—*Presse Méd.* 1923. Dec. 15. Vol. 31. No. 100. (Supplement.) pp. 2093–2100. With 5 text figs. [3 refs.]

This article deals with the medical and hygienic organization of the Transvaal Mines, recently visited by the authors. The Transvaal obtains 40 per cent. of its labour from the neighbouring Portuguese Colony of Mozambique, its agent being the Witwatersrand Native

Labour Association. Nearly 50,000 natives were engaged in the year 1922. The recruits are collected at the railway station on the Portuguese frontier, where suitable buildings have been erected, and are carefully examined by a Portuguese doctor and a medical representative from the mines. Those who are engaged are taken to Johannesburg, some 20 hours' journey, where they are maintained for a month without working, become acclimatized, and receive three injections of anti-pneumococcic vaccine. Arrived at the mines they occupy in the compounds rooms with cemented floors, containing charcoal stoves, in which 24 to 36 persons are provided each with a bunk of reinforced concrete. Cooked food is provided, a concession which seems to have specially struck the authors. Furthermore, they are looked after by a Portuguese official or "Curator," whose duty it is to visit each mine monthly and receive and adjudicate on complaints, and report is made annually to the Governor of Mozambique.

In 1910, 11 and 12 the mortality was 97, 87 and 70 per mille, figures which do not include the deaths before commencement of work. Since 1913 recruiting has ceased north of 22° S. and measures have been taken against preventable disease. The mortality in 1913 was 26·5, in 1919 18·6, in 1922 14·2, the numbers varying in this period between 50 and 80 thousand. In 1914 the chief causes of death were in the following order:—lobar pneumonia, tuberculosis, silicosis, meningitis. Pneumonia is prevented by immunization and general measures of hygiene. Its mortality, 12·8 in 1906, had fallen to 2·6 per mille in 1919. Of cerebrospinal meningitis cases 35 per cent. are due to the pneumococcus, the remainder to the meningococcus. Silicosis is prevented by ventilation and spraying. In 1912 26 per cent. of labourers were attacked, in 1916 6·5. Natives who have acquired silicosis or tuberculosis are invalided and indemnified. In 1922, 819 were so treated, at a cost of £43,768. Malaria is rarely seen; deaths from this cause in 1914–15 did not reach 1 per 6,000.

Invalided natives are taken to the Portuguese frontier station, hospitalized, if necessary, and then shepherded by the W.N.L.A. to their villages. At the termination of the contract, generally after a year, the labourers are repatriated: 55 per cent. sign on for a second period, but the authors note that in Mozambique work is compulsory.

The authors proceed to compare the conditions of labour in the French colonies. In Madagascar the native breaks his contract if he wishes; there is no obligation to work. In French Congo little has been done to protect the workers and supply them with medical aid. In August 1923 there were 20 doctors for this great area with a population of 2,450,000, whereas in Angola, a smaller country, there were 71. Belgian Congo counts 94 state doctors and 24 medical missionaries. In Cameroon, however, the conditions are better than in Congo française. At Brazzaville women were recently seen acting as porters; depopulation therefore is not surprising.

The authors lay down rules which should be imposed on all large employers of labour, rules such as are in force in other colonies. They note that whereas neighbouring colonies publish annual medical reports, reports, statistics, etc. from French Colonies are often not accessible to the public. Such economies account in part for the lack of personnel, but they note, also, that the salaries offered are "derisory." France, they believe, is the only country which, in engaging doctors for the colonies, does not insist on their taking a course at a school of tropical medicine. They remark, finally, that the budget of a colony may appear

to balance, but only by the omission on the expenditure side of the human capital that has disappeared, which to the home country represents a deficit that cannot be met.

A. G. B.

VAN DEN BRANDEN (F.) & VAN HOOF (L.). **Fonctionnement du Laboratoire de Léopoldville pendant l'année 1922.**— *Ann. Soc. Belge de Méd. Trop.* Brussels. 1923. Nov. Vol. 3. No. 2. pp. 157–180. With 6 figs. and 1 graph.

This is a report of a year's diligent work, including besides a comprehensive laboratory routine, original epidemiological and therapeutic investigations. Some items of general interest may be extracted.

Among 48 children suffering from subtertian ague crescents were found in one case only. Though, of course, the mortality from amoebiasis has decreased greatly since the institution of emetine treatment, yet recently it has again increased. There has been considerable dubiety regarding the nature of an epidemic varioloid that since 1918 has been classed as alastrim : in 1922 the number of recorded cases was 625 with a mortality of practically 10 per cent., and the conclusion now is that it should be dealt with as if it were smallpox. Various therapeutic trials of bismuth salts are recorded : trepol seems to have no trypanocidal action, but, applied as powder, is very effective for phagaedenic ulceration associated with the spiro-fusiform bacillus ; in oily suspension, though painful and readily toxic, it is pronounced to be comparable with the higher arsenical salts in the treatment of yaws, but Bi 36, Bi 33.8, and Bi 36 Meurice are considered more amenable and more effective (comparatively to their Bi content) in the treatment of this disease ; muthanol (hydroxide of bismuth in oily suspension), though not so painful or so toxic, is not so efficacious as trepol in yaws. Therapeutic trials of arsenical products are also recorded : Bayer 205, in 64 human cases, was found efficacious in the early stages, but not better than atoxyl in the late stages of trypanosomiasis : cacodylin, though well borne in large doses, had no trypanocidal effect in two cases. In animal trypanosomiasis Bayer 205 seemed to have no effect on *T. cazalboui*, but a marked effect upon *T. congolense*. Annexed to the laboratory there is a small medical school for training native hospital and laboratory assistants, but the technical instruction appears to be frustrated or obstructed by the imperfect literary education of the candidates.

A. A.

WALRAVENS (P.). **Compte-rendu du Congrès de médecine tropicale en Afrique occidentale (Saint Paul de Loanda).**— *Ann. Soc. Belge de Méd. Trop.* Brussels. 1923. Nov. Vol. 3. No. 2. pp. 181–207.

The first West African Congress of Tropical Medicine, held at St. Paul de Loanda from the 16th to the 23rd July 1923, was attended by delegates from the Belgian colonies, from France and the French colonies, from Portugal and her colonies, and by a delegate from British West Africa (Nigeria) and one from the Union of South Africa. The

programme for discussion was extraordinary full and varied—well worthy of an historic event. It included not only all the classical topics of tropical medicine and sanitation and the large problems of sleeping sickness, but also various social-sanitary matters, such as tuberculosis, venereal prophylaxis, infant hygiene, etc., the bearing of which upon the destinies of tropical populations is just beginning to be recognized.

A. A.

Smith (Lawrence W.). **Medical Impressions of the Philippine Islands.**—*Boston Med. & Surg. Jl.* 1923. Dec. 20. Vol. 189. No. 25. pp. 1018–1026. With 4 figs.

The author made a five-weeks' tour round the principal islands while serving as Medical Officer in the Philippine Health Service during a leper collecting trip and afterwards worked for a year in the Department of Pathology and Bacteriology in the College of Medicine at Manila, where there is a large hospital and about 1,000 autopsies are made yearly.

He says that there are 5,000 lepers at the Culion Colony and 5,000 at large in the islands, but they are brought in now more willingly than in the past. He gives some description of yaws, hookworm infection, malaria, dysentery and enteric, with special reference to their prevention. Cholera, smallpox and plague have almost disappeared, But the real menace to health is to be found not among the "tropical diseases," but in tuberculosis. From autopsy statistics he concludes that over 35 per cent. of the total deaths [? at Manila] are due to tuberculosis, which he believes to be "practically entirely of the human type," for very little milk is drunk. The chief forms are pulmonary, renal and intestinal.

Other diseases mentioned have a restricted distribution. Such are filariasis in a focus of 30 square miles; *Schistosoma japonicum* infection on the island of Leyte, where the intermediate host has not yet been found; lithiasis, especially of the kidney and bladder, in a mountainous region in Mindanao near Lake Lanao and also in a locality 25 miles from Manila. Scarlet fever is practically unknown; and whooping cough and anterior polyomyelitis are mild. Rickets was not seen, though "it is safe to say that every child is on a fat deficient diet," but "the people live out of doors the year round." Scurvy is practically unknown, but beriberi is a great cause of child mortality. The author met with but one case of pernicious anaemia, in an American, and believes leukaemia to be rare. He was struck by the "very low incidence of syphilis," but by this he appears to mean post mortem lesions, for he goes on to say that he found only one aortic aneurism and two cases of syphilitic aortitis. In routine Wassermanns on hospital admissions less than 0·5 per cent. were positive, and many of these could be explained by a yaws infection. Gonorrhoea was common enough. Sprue and dengue receive mention. The incidence of acute nephritis also was low, and vascular nephritis is seen less often than at Boston. Of primary liver carcinoma he saw 12 cases, confirmed by autopsy, in less than a year, and many more clinically; most occurred in the decade, 35–45. He notes a very high incidence of chronic hepatitis or cirrhosis.

A. G. B.

British Guiana. **Report of the Government Bacteriologist, British Guiana, to the Tropical Diseases Research Committee, 1922.** [Rose (F. G.), Government Bacteriologist.]—[MS. received from the Colonial Office.]

An attempt was made by the injection of barium sulphate under the skin of a patient with an elephantoid condition of one leg to determine the presence and site of lymphatic obstruction, the progress of the barium being studied by means of serial radiograms. Up to the present barium has not been detected in the neighbouring lymphatic glands.

Experiments have been made on the effects of high frequency currents on filarial embryos. Treatment was followed by a fall in the number of embryos, but no effects were noted in the embryos.

To the arm of a filarial patient who had been under observation for some years a pad soaked in 1 per cent. solution of antimony potassium tartrate was applied on three occasions; live adult filariae were believed to be present in a thickened lymphatic beneath. After the third application the patient became very ill with symptoms of severe toxaemia. It is not proposed to repeat the experiment.

Examination of six captured rats and the injection of their tissues into guineapigs did not reveal the presence of *S. icterohaemorrhagiae*.

It is stated that the results of prophylactic inoculation with streptococcal vaccines in filarial lymphangitis have proved so encouraging that increasing numbers of people have recourse to this method of treatment. A large number have remained under observation for 12 months or more. Of the 159 in this series 57, or 35·8 per cent., showed microfilariae in the peripheral night-blood and all presented typical signs of filarial lymphangitis and lymphadenitis. A number of tables illustrate points of interest. Of the 159, 111, or 69·8 per cent., had no recurrence for at least 12 months after inoculation, and only 26, or 16·4 per cent., had any further attacks before an interval of 6 months had elapsed.

	No. inoculated.	No. with recurrences (if any) more than 12 months after.		No. with recurrences before 6 months' interval.	
			Percentage.		*Percentage.*
First attacks ..	37	32	86·5%	2	5·4%
1 attack in 12 months	18	15	83·3%	1	5·6%
1 attack in 6 months	34	21	61·8%	9	26·5%
1 attack in 3 months	41	28	68·8%	5	12·2%
1 attack per month	18	8	44·4%	6	33·3%
1 attack every week or so.	11	7	63·6%	3	27·3%
	159	111	69·8%	26	16·4%

It is clear then, the author writes, that this method of treatment holds out considerable hope of alleviation to those who suffer from this frequent and distressing concomitant of infection with *Filaria bancrofti*.

Of 301 dysenteric stools examined 108 are described as blood and mucus stools and 193 as diarrhoea and mucus and diarrhoea. Of the former group 8 were positive for B. Flexner and 28 for *E. histolytica*. Of the latter group one was positive for B. Flexner. It is concluded

that at Georgetown amoebic infection predominates, and that the prevailing dysentery bacillus is B. Flexner.

A. G. B.

DE ALMEIDA (A. Ozorio). **Le métabolisme minimum et le métabolisme basal de l'homme tropical de race blanche. Contribution à l'étude de l'acclimatation et de la loi des surfaces de Rubner-Richet.**— *Jl. de Physiol. et de Path. Gén.* 1919–20. Vol. 18. pp. 713–730. [38 refs.]

——. **L'émission de chaleur. Le métabolisme basal et le métabolisme minimum de l'homme noir tropical.**— *Ibid.* pp. 958–964. [9 refs.]

EIJKMAN (C.). **Le métabolisme de l'homme tropical.**— *Ibid.* 1921. Vol. 19. pp. 33–35. [2 refs.]

These three papers deal with a subject of great practical importance, and on which comment has already appeared in these pages. Professor de Almeida is well known as an investigator on many subjects of physiological importance, and from his researches on white people in Brazil concludes that their basal and minimal metabolism is on the average 24 per cent. lower than in inhabitants of temperate zones. Their habitual intensity of heat production is a factor additional to the law (Rubner-Richet) of surface area, and its lowering is regarded as an adaptation to their environment, and an advantage in their struggle against high air temperatures. The same is true for the coloured inhabitants of these regions (second paper).

The third paper of the series is by Professor Eijkman, of Utrecht, who is well known by his researches in the Dutch Indies, and who has undertaken similar investigations on metabolism there, but has obtained diametrically opposite results with both European and native subjects ; in these he found the basal metabolism identical with that in temperate climates. He attempts no explanation of the differences between de Almeida and himself. It is not the province of a reviewer to play such a part. The number of experiments performed by each is so great that individual difference or idiosyncrasies of the subjects may be ruled out. There is evidently a difference of methods or reasoning, but these are not on the surface. It is difficult, however, to believe that such a fundamental fact as basal metabolism is should be greatly affected by climate, any more than body temperature is ; on the other hand, it is open to argument that the maintenance of one's temperature must call for less effort on the part of the organism in a warm than in a cold climate. Mere external temperature is, after all, only one feature of a tropical climate, and it is quite possible that other factors might explain why there should be different results in Rio de Janeiro and Java. Many years ago when commenting on an allied matter I wrote : " In dry hot climates physical fitness is promoted by the taking of a considerable amount of out-of-door exercise. Quite otherwise is it in climates like that of the coast line of British East Africa, where the tropical sun is combined with the moisture laden wind. There the possibilities of heat loss by radiation and by evaporation are small, and the English official perforce reduces his heat production to a minimum. He lives indoors, takes as little exercise as possible, and the pallor of his countenance contrasts strongly with the high colour which his colleague in India or Egypt exhibits."

It is quite evident we have not got to the bottom of the matter, and further work lies before the scientific investigator of metabolism in the tropics.

W. D. Halliburton.

FEJGIN (Bronislaya). **Examen de quelques microbes isolés des matières fécales.**—*C. R. Soc. Biol.* 1923. Dec. 22. Vol. 89. No. 37. pp. 1383–1385.

As matter of bacteriological diagnosis and of biological interest attention is here drawn to three microbes, identical in their morphological and cultural and fermentative characters, discovered by the author in stools from suspected dysentery cases. They are small rods of 1 to 4 μ, gram-negative, non-flagellate and non-motile, non-capsulate, non-sporific and non-gelatine-liquefactive. The author describes in detail all their chemical and bio-chemical reactions and concludes that although their fermentative properties are almost identical with those of *B. coli*, yet all their serological properties point to an origin from Shiga and Flexner bacilli modified by a lytic agent formed in the infected animal organism.

A. A.

CLUVER (Eustace H.). **Ventilation : the Problem of Removing Excess Body Heat.**—*Med. Jl. S. Africa.* 1923. July. Vol. 18. No. 12. pp. 291–296. [18 refs.]

Of the two arguments for ventilation, namely (*a*) the removal of CO_2 and deleterious emanations from the human body, and (*b*) assisting dissipation of body heat, the latter is much the more important; indeed, it is very doubtful if the former have any weight at all—though, of course, noxious gases and dusts produced by certain occupations is a matter apart. In health the rectal temperature may vary between 97° F. in the early morning and 99·9° F. in the evening, or even to 101·4° F. after vigorous exercise ; on the other hand, little if any lowering of internal body-temperature is caused by cooling the surface of the body for a short time. Thus the dissipation of body-heat in warm climates is an important problem. The kata thermometer devised by Leonard HILL is used in the Rand for determining the cooling power of the atmosphere. In general it may be said that hard work is done in the Rand mines under conditions that do not exceed dry-kata 4 and wet-kata 15. But though a cool climate is invigorating, fatigue is caused by exposure to low atmospheric cooling powers. Johannesburg by-laws require for places of public assembly dry-kata reading 5 and wet-kata reading 18. " With a sufficiency of windows and fans it is probable that buildings of all kinds in the Transvaal can be satisfactorily ventilated at all seasons." The contents of the paper hardly fulfil the promise of the title.

A. A.

STEPPUHN (Oscar), ZEISS (Heinz) & BRYCHONENKO (Sergei). **Biochemische Untersuchungen ueber " Bayer 205 " (Vorläufige Mitteilung).** [Biochemical Investigations of " Bayer 205 ".]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1923. July. Vol. 27. No. 6. pp. 206–210. [3 refs.]

MAYER and ZEISS ascertained that the serum of animals treated with " Bayer 205 " acted curatively for a month or more on animals

infected with trypanosomes (see this *Bulletin*, Vol. 19, p. 508). The authors therefore enquired whether the drug itself could be found in the circulation or the serum had acquired curative properties as a result of the treatment. They made use of a colour reaction which will detect as little as 0·0001 gm. "Bayer 205," and depends on the cleavage of the drug in alkaline solution with union of the components with diazotized sulphanilic acid in acid solution. They discovered, moreover, that if the blood of a rabbit treated with a big dose of "205" is removed soon after it will not clot. This property is retained for some hours with a dose of 0·3 gm. per kilo; and even a very small dose reduces the amount of clot formed. With the failure to clot goes a sharp fall of temperature; with its recovery the coagulability returns. The loss of coagulability is due to the albumin components (fibrinogen, thrombin) being robbed of their properties by combination or adsorption. It was found also that undiluted serum in which the drug is dissolved will not clot even though the mixture be boiled for a long time. Other instances show the property of "Bayer 205" of drawing to itself or protecting all albumins in solution: *e.g.*, if the drug is allowed to stand with the complement, a negative Wassermann becomes positive; rennet cannot clot milk to which "Bayer 205" has been added.

The authors point out various applications in physiology and bacteriology to which these remarkable properties of "Bayer 205" may be put.

A. G. B.

Braafladt (Louis Henry). **The Effect of Kaolin on the Intestinal Flora in Normal and Pathologic Conditions.**— *Jl. Infect. Dis.* 1923. Nov. Vol. 33. No. 5. pp. 434–456. With 1 plate. [46 refs.]

Kaolin is a natural hydrous aluminium silicate, which after purification contains about 47 per cent. of silica, 40 per cent. of alumina and 13 of water. The author used Merck & Company's preparation. Experiments were made on rats, rabbits, guineapigs, dogs and four healthy men. As to the effect on bacteria growing in artificial fluid media it was found that if these are incubated at body temperature and kept in motion for 2–3 hours a large number of bacteria are carried down by the kaolin. Bacterial toxins and toxic products (typhoid and dysentery) were neutralized when treated with kaolin; the mixture was centrifuged, and the supernatant fluid injected into rabbits; the animals survived. The effect on the normal intestinal flora was tested on rats and dogs; a predominantly proteolytic flora was changed to an aciduric. The four men took 30 gm. a day for a month; in three the flora became predominantly aciduric in 8 to 10 days. Digestion was not upset. The type of colony seen under these conditions is described and figured. The clinical observations mainly concern cholera, many cases of which were treated by the author in China (see this *Bulletin*, Vol. 16, p. 434). Fifteen severely ill patients and 20 moderately ill received no other treatment but kaolin, 3 ozs. of a thick suspension at first every half hour; only one died, whereas 9 out of 41 died when treated with salt solution. Notes are given of its use in dysentery, chronic ulcerative colitis and tuberculous enteritis.

A. G. B.

GORDON (R. M.). **The Frequency of Indicanuria.**—*Ann. Trop. Med. & Parasit.* 1923. Dec. 21. Vol. 17. No. 4. pp. 549–551. [12 refs.]

The author tested the urine of 380 cases for indican (by addition of 5 per cent. potassium chlorate, strong hydrochloric acid and chloroform). Of ninety healthy persons, 24 per cent. were positive, but it is noted that many people give opposite results at different times. Of 290 cases undergoing treatment for various disorders 94 per cent. of 35 amoebic dysentery cases were positive, 50 per cent. of 20 malaria cases, and 3 out of 4 cases of sprue. Five bacillary cases were negative. An abnormal frequency of this condition is noted in amoebic dysentery and sprue, and, it is suggested, may be of value in differential diagnosis.

A. G. B.

RADSMA (W.). **Over het Ca-gehalte van het bloed, in het bizonder in de tropen.** [On the Ca-content of the Blood, especially in the Tropics.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1923. Vol. 63. No. 6. pp. 854–863. [2 refs.]

The assertion, especially by clinicians, that the blood in the tropics contains less calcium than in Europe, incited the author to this study. For methodological details the original paper should be consulted. The result is that the calcium content of the blood (9·2–10·7 mgm. per cent. in serum, 5·9–6·85 mgm. per cent. in whole blood) in the tropics practically agrees with that found in Europe and America.

W. J. Bais.

DIXON (W. E.). **Smoking of Indian Hemp and Opium.** [Correspondence].—*Brit. Med. Jl.* 1923. Dec. 15. pp. 1179–1180.

By excellent arguments the writer of this letter supports the view, held by reasonable people, that it is by the individual manner of their use, and not by the methods of the political partizan, that Indian hemp and opium should be judged. He quotes the words of Dr. GILES, the professor of Chinese in Cambridge, who spent many years in China—that "an opium-smoker may be a man of exemplary habits, never even fuddled, still less stupefied," and he points out also that morphine and allied alkaloids are largely destroyed or deposited in the pipe, not absorbed by the smoker. As regards Indian hemp he refers, *inter alia*, to the finding of the Royal Commission of 1894 "that the moderate use of Indian hemp-drugs produces no injurious effects upon the mind," and incidentally he points out that Indian hemp is active only when quite fresh or preserved in sealed tins, and that for vicious smoking purposes the stuff usually obtained in this country is, however unpleasant, not different from any other dried herb.

A. A.

LAUBENHEIMER (K.). **Ueber die Einwirkung von Metallen und Metallsalzen auf Bakterien und Bakteriengifte. Versuche zur praktischen Verwertung der oligodynamischen Wirkung von Metallen.** [The Action of Metals and their Salts on Bacteria and Bacterial Poisons.]—*Ztschr. f. Hyg. u. Infektionskr.* 1921. Mar. 5. Vol. 92. No. 1. pp. 78–114. [33 refs.]

Metallic silver appears to exert a toxic action on bacteria in water only when the organisms are scanty; should the water be grossly

contaminated with organisms or with sewage it exerts no effect whatever. Colloidal silver and metallic copper inhibit, to some extent, a production of tetanus-toxin; but metallic silver does not. The diminution in virulence apparently takes place through disturbance of the "toxophore" group. The action of metallic copper takes place in physiological saline as well as in distilled water; copper chloride acts in the same way and has a similar action on diphtheria toxin. The *endotoxins* of the dysentery (Shiga) bacillus are affected in the same manner as are the exotoxins of tetanus and diphtheria. Rabbits can be immunized by endotoxins acted upon by copper against many times a lethal dose of pure endotoxin, while silver has no such action. Typhoid bacilli killed with metallic silver yield a vaccine which is practically free from toxic properties; for this purpose silver-lined flasks are used. Experiments with the dysentery bacillus on similar lines lead to unfavourable results. Shiga bacilli killed in this manner with silver still retained their toxic properties for rabbits. Copper, on the other hand, while killing these organisms attenuated their toxins, so that rabbits could easily be immunized. Paratyphoid B bacilli treated in the same manner also lost their toxic properties, while a high degree of immunity was produced.

P. H. Manson-Bahr.

Tixier (Léon). **Les anémies parasitaires (parasites endo-globulaires).**— *Rev. Prat. Malad. des Pays Chauds.* 1923. Nov. Year 2. Vol. 3. No. 3. pp. 189–210. [3 refs.]

This is a review of the existing state of our knowledge of anaemia consequent on malaria and on leishmaniasis. Malarial anaemia is briefly considered in its respective clinical and haematological aspects as it occurs in primary infections, in chronic phases, in malignant infections, and in children and infants, and diagnosis and treatment are discussed generally. The practitioner in the tropics will not find anything in any way unfamiliar.

A. A.

Anigstein (Ludwik) & Milinska (Zofja). **Investigations on Jaundice of Bacterial Origin.**— *Jl. Trop. Med. & Hyg.* 1923. Nov. 15. Vol. 26. No. 22. pp. 337–340. [14 refs.]

During the war an unusual number of cases of disease associated with icteric symptoms were observed, often in epidemic concentration, in the Dardanelles and Roumania, and in the autumn of 1921 similar epidemics attracted the authors' attention in Poland. The clinical phenomena are those of catarrhal jaundice, and the blood examination shows a relative increase of lymphocytes (large and small) and up to 15 per cent. of eosinophilia. In 67 cases in Warsaw diagnosed as "catarrhal jaundice" the serum of 80 per cent. agglutinated *Bacillus aertrycke* Stanley. From the blood (or urine) of these cases were cultivated variously a strain of bacilli corresponding with paratyphoid B and Witts, one closely related to paratyphoid C and to Witts, and one very similar to aertrycke Stanley and to typhoid. The authors, therefore, having at the outset excluded Weil's disease, conclude that paratyphoid bacilli of different types take a part in the aetiology of the catarrhal jaundice in question.

A. A.

HARFORD (Charles F.). **The Psychical Aspect of the Sequelae of Malaria and Dysentery, and their Treatment by Auto-Suggestion.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1922. Nov. 16 & Dec. 21. Vol. 16. Nos. 5 & 6. pp. 316–322. (Discussion pp. 322–325.)

As a result of personal experience and from the study of pensioners at the Tropical Disease Clinic the author believes that many supposed malarial or dysenteric relapses in such people are really of psychical origin, and can be relieved by a course of "Couéism." Instances are given.

A. G. B.

EMMANUELE (Attilio). **Su due casi d'infezione associata leishmaniosi interna-melitense.** [Associated Kala-Azar and Undulant Fever.] —*Pediatria.* 1923. June 1. Vol. 31. No. 11. pp. 603–608. With 1 text fig. [4 refs.]

Two cases, children 5 years of age, are described in which kala azar was associated with undulant fever. The former disease was diagnosed by the presence of Leishman-Donovan bodies in the bone marrow, the latter by agglutination of the *Micrococcus melitensis* in high dilution of the serum, and in one case by isolation of the organism from the urine. Treatment consisted in injections of vaccines of the micrococcus followed by antimony tartrate.

H. Harold Scott.

BOSE (J. P.). **Glucose Tolerance Tests and their Interpretation.**— *Indian Med. Gaz.* 1923. June. Vol. 58. No. 6. pp. 241–242. With 5 charts.

From experiments in the conduct of which the author has co-operated it is concluded that by means of glucose tolerance-tests it is possible not only to discriminate simple forms of glycosuria from true diabetes mellitus, but also to contribute to the diagnosis of other diseases with which disturbed carbohydrate metabolism is associated. Thus definite types of bloodsugar curves can be obtained for certain disorders of the ductless glands, such as hyperthyroidism, hyperpituitarism and hypopituitarism, and for a rare variety of kidney disease, which hitherto have been confounded with diabetes mellitus.

The glucose tolerance test is described as follows:

"It has been found by experiment that a normal healthy individual can absorb 100 grammes of glucose without the appearance of abnormal amounts of sugar in the urine. But if the dose is doubled there is always a temporary glycosuria. By giving glucose by the mouth and examining the urine for evidence of glycosuria, it has been found that the limit of tolerance for glucose in normal individuals is about 150 grammes.

"To do the glucose tolerance test the patient is given a light meal in the morning, consisting of one egg and tea or coffee, without sugar. Three hours later the urine is collected, measured, and the amount of urinary sugar estimated. At the same time the blood-sugar content is also determined.

"The patient now consumes 50 grammes of glucose dissolved in 150 cc. of water. This amount of glucose has been found to be sufficient, since it is the type of response we are gauging and not the actual amount of sugar in the blood, at any given moment. Further, for every given individual, the type of curve obtained is identical in form whether 25, 50, 100 or 150 grammes of sugar are given.

"Exactly 15 minutes after the last drop of sugar solution has been consumed, the blood is taken again and the sugar content estimated. The blood-sugar estimation is repeated at ½ hour, 1 hour, 1½ hour and 2 hour intervals after the sugar has been consumed. At the end of one hour and two hour intervals the urine is collected, measured, and the amount of sugar present determined. In this way we have figures for the blood-sugar before the test and ¼ hour after, ½ hour and 1 hour, 1½ hours and 2 hours after the test."

A. A.

RADSMA (W.). & GOELAM. **Bloedsuikerbepaling volgens de methode van Shaffer-Hartmann en de modificatie daarvan door Cohen Tervaert.** [Bloodsugar Estimation by the Method of Shaffer-Hartmann and its Modification by Cohen Tervaert.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1923. Vol. 63. No. 5. pp. 787–799. With 1 chart.

Cohen Tervaert's modification makes it possible to use smaller quantities of blood (0·2 cc.) than required for Shaffer-Hartmann's method (1 cc.). For details of both methods the original should be consulted. The authors using both methods at Batavia in Europeans and Javanese obtained blood sugar values conforming to European figures. This is in discordance with the much higher figures obtained by others in the tropics (DE LANGEN and SCHUT, see this *Bulletin*, Vol. 13, p. 43). The authors promise further comment upon this important subject.

W. J. Bais.

MCARTHUR (D. C.). **Syphilis as we see it among the Natives of Bechuanaland To-day. Being a Study of some 1,547 Cases of Syphilis occurring among the Native Tribes of Taung, extending over a Period of Six Years.**—*Amer. Jl. Syph.* St. Louis. 1923. July. Vol. 7. No. 3. pp. 569–607. With 18 figs. [35 refs.]

——. **Syphilis in the Bechuanaland Native : Some Points wherein it differs from that seen in the European.**—*Brit. Jl. Dermat. & Syph.* 1923. Nov. Vol. 35. No. 11. (No. 421.) pp. 411–425. [14 refs.]

A study of 1,547 cases of syphilis among the natives of Taung district in the North West borderland of the Cape Province, Union of South Africa ; observed during the author's 6 years' residence as district surgeon with charge of a native dispensary.

This paper is an important one as a contribution to the question of the health of African native races. Further, many of the conclusions which the author draws from his observations are so unusual, in some cases so startling, that it will be necessary to consider them in some detail, as without confirmation they are unlikely to receive general acceptance. Syphilis, it is stated, was introduced into Bechuanaland about 1874, and during the ensuing 30 years spread unchecked among the native inhabitants, so that at the present time it is estimated that from 5 to 25 per cent. of the population are suffering from that disease. During the six years in which observations were made, a register was kept and 1,547 cases recorded therein ; of these 1,009 were found to belong to families in which other members were suffering from the disease and were grouped into 286 family groups ; 538 cases remained ungrouped. Extracts from this register are given showing family groups, mention being made of case number, sex, age (whether

under or over 14 years), a note in one or two words of the lesion found and the relationship between the members of the group. The information contained in this register formed the basis around which the author has written his paper and upon which he has built up his conclusions. The register will indicate, he says, " (1) the wholesale syphilization of families ; (2) the *preponderance* of heredosyphilis ; (3) the *total absence* of acquired syphilis ; and (4) the type of lesion met with." [The italics are the reviewer's, inserted to draw attention to a type of statement met with throughout the paper.] From other parts of the paper one gathers that the author believes that (5) all the evidence is against yaws being involved in the question, (6) visceral lesions are generally absent, (7) there is " insusceptibility of the cerebrospinal axis to attack," (8) there is marked chronicity and slow development of isolated lesions, (9) the common " favoid " condition of the scalp called " wit-kop " is a syphilitic manifestation, (10) amplifying (2), there is a high incidence of syphilis hereditaria tarda, (11) the disease is transmitted to the third and fourth generations. The statement is also made that " evidence of race degeneration in Bechuanaland is abundant . . . . it is the exception to see a fine adult specimen of either sex . . . the explanation is clearly that of syphilization of the community." Glancing at the extracts from the register we see reported a number of persons suffering from a variety of lesions chiefly referred to as gummatous ulcers, syphiloderms, nasal and pharyngeal ulcerations and necrosis among those over 14 years of age and " wit-kop " and mucous plaques under that age. Diagnosis was apparently made on inspection, and in the absence of other evidence we may hesitate to accept all these cases as cases of syphilis.

Pains have been taken to emphasize the family grouping, but groups include such distant relations as second cousins. What does the author wish to show ? If it be intended to suggest that these two individuals were cases of the disease inherited from a common great-grand-parent one would like to know more about the other descendants.

Again, in " group 9," what value is attached to finding three sisters and a brother with syphilis and then a cousin with the disease five years later ? With the idea of demonstrating " the extraordinary family syphilization which has taken place," a family tree (No. 1) referring to family group 283 is figured in four generations ; there is no evidence of syphilis in the first and second generations, in the third generation some members are shown as suffering from the disease and some not, but in the fourth generation all cases shown are shown as syphilitics ; no mention is made as to whether all members of the fourth generation are shown or only those showing evidence of syphilis, and let it be noted 9 out of the 13 members of the fourth generation only show " wit-kop," thus proving little more than that syphilis is a common disease and so is " wit-kop." It should also be remarked that the relationships as shown in the family tree do not always tally with those indicated in the register. Case 371 in the register is shown as mother of case 1,594 ; in the tree they appear as sisters ! One also casually observes that in the register under family group 93, the woman 314 is shown as under 14 years of age but at the same time to be the mother of three children ! Such errors, and they are bound to have been numerous when collecting information in this way, rather detract from the value of the evidence. Turning now to Dr. McArthur's main thesis—the preponderance of heredosyphilis, arguments are brought forward which, to the reviewer at least, are anything but convincing.

To the author "a primary chancre—and particularly a genital sore—is something of a pathologic curiosity," and he thereupon appears to take refuge in believing that all the disease he sees is inherited disease. He says that to produce the amount of syphilis now existing gross sexual promiscuity would have been necessary, a custom he seems to think impossible, "as the native in his own way is not without a standard of morality," while in the next sentence he refers to the revolting practice found among them of using "the axilla or thighs of a young child to secure sexual gratification." He thinks that the disease is contracted in the ordinary way in towns and refers to the "continual migration of natives from country to town, and *vice versa*," yet because he does not see the primary lesion he seems to believe that they do not occur, while admitting elsewhere that "there is often a history of sores in youth," and that "even if the chancre were evident, it is doubtful if the native would bring it to notice and seek advice for it." He adds that scars of healed ulcers are often seen on any part of the body. Has Dr. McArthur ever seen the statistics in a skin hospital of the number of late syphilides giving no history of initial lesions? However, having thus persuaded himself that *all* his cases of syphilis are of the inherited disease, he finds it very difficult to explain the symptomatology as he sees it in the native. To quote, "keratitis is only seen occasionally, specific deafness unknown, Hutchinson's teeth simply do not exist." On the other hand, "amongst the more frequent manifestations are mucous plaques, condylomata, tibial periostitis and 'wit-kop,'" and he might have added syphiloderm, a term Dr. McArthur apparently prefers to syphilide, for what reason one does not know. He says of symptoms appearing later in life for the first time—"In fact, one is beginning to suspect that many cases appearing at later periods verging on middle life are instances of syphilis hereditaria tarda," but such cases are surely comparable to those in this country where women at the menopause develop gummata as their first signs of the disease.

In regard to the transmission to the third and fourth generations, Dr. McArthur appears satisfied that he has abundant evidence, though one is more inclined to agree with him when he says "all evidence submitted therefore must be presumptive rather than positive"; the family tree No. 3 given in support of his idea is certainly presumptive rather than positive. Reference, too, must here be made to the photograph (Fig. 1) labelled "a hydrocephalic dwarf," an excellent example of dystrophic dwarf and referred to under third generation transmission. In this photograph one recognizes with something of a shock a perfect example of achondroplasia!

Attention must also be called to "wit-kop," a condition which Dr. McArthur proposes as a new symptom of syphilis and upon which his diagnosis of the disease in many cases depends. It is described as resembling impetigo of the scalp in the earlier stages and later favus, with an age incidence from infancy to puberty and sometimes relapse in later life and is said to be associated with mucous tubercles and condylomata: spontaneous cure sometimes takes place, and it responds to treatment with arsenobenzene compounds. In spite of other observers having found the achorion fungus in these cases the author persists in believing the condition to be a syphilitic one.

To the reviewer it would appear, therefore, that Dr. McArthur has shown that a great deal of syphilis exists among the natives he had under observation, the evidence about yaws is not conclusive, no mention is

made of tropical ulcer, gangosa, leprosy, tuberculosis as possible factors. The disease would seem probably to be transmitted from person to person by contact often in early childhood, and the evidence for there being much heredosyphilis is in great part wanting. At the same time it seems very doubtful whether wit-kop is anything but ordinary favus, occurring among a poor class of native, possibly, of course, in a native suffering from syphilis. Much more general evidence would be required before race degeneration due to syphilis could be admitted.

H. S. Stannus.

Brun & Delamare. **Un cas d'arthropatrie tabétique observé chez une femme arabe.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1923. Dec. 6. Year 39. Vol. 47. 3rd Ser. No. 35. pp. 1617–1618.

In a scrutiny of North African records of 25 years Lacapère could discover but very few published cases of tabes and only 2 of syphilitic joint-disease. The authors here narrate some details of a case of tabes, with associated lesions of the knee-joint, developed in an Arab woman born and always resident in Tunis.

The symptoms began 14 months ago, with progressive loss of power, formication, and intermittent but not violent pains in the lower extremities. At present there is defective co-ordination aggravated by the trouble in the left knee (which began suddenly 7 months ago), loss of sense of touch and temperature, and complete abolition of patellar and tendon and plantar reflexes. The Argyll-Robertson pupil is evident, signs of aortitis exist, and the Wassermann test is double plus for the blood and treble plus for the cerebro-spinal fluid.

A. A.

Wilson. **Nerve Diseases.**—*Nigeria Ann. Med. & San. Rep. for the Year 1922.* p. 34.

Two cases of tabes are noted, one in a Krooboy who had such extreme incoordination that it required three men to hold him upright. Both responded well to treatment.

A. G. B.

Müller (H.) & Soekaton (Reksomidjojo). **Over orchitis luetica bij Javanen.** [Orchitis Luetica in Javanese.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1923. Vol. 63. No. 4. pp. 675–683. With 2 figs. [17 refs.]

In a series of 459 post mortems of male Javanese syphilitic orchitis (gummous or fibrous) was found in 19 cases. Other etiologic factors (gonorrhoea, tuberculosis, yaws, alcohol) are excluded. In the presence of other tertiary syphilitic lesions orchitis was hardly ever found to be missing; this makes it of clinical importance as well. If the incidence of this affection were the same as in Europe, *i.e.*, 1 : 30 cases, this would mean a serious endemicity in the Malay population of Java (at least in the towns). Though the benign course of syphilis in the Malay-race must be admitted (rarity of congenital syphilis, of syphilis of the vessel wall and of the nervous system), the authors maintain that the disease is widely spread and more common than in Europe.

W. J. Bais.

KORSBJERG (A.). **De bismuthbehandeling van syphilis en framboesia.** [The Bismuth Treatment of Syphilis and Yaws.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1923. Vol. 63. No. 5. pp. 751–766. [29 refs.]

After reviewing the recent publications on this subject (trepol, neotrepol, etc.) Korsbjerg gives an account of the favourable results obtained with iodine-bismuth-quinine "Holtappel," the definite chemical composition of which is not stated. It is administered by intramuscular injections in doses of 100–150 mgm. in 10 per cent. emulsion in olive oil. There were no untoward symptoms (sore mouth, albuminuria). Six cases are quoted. in two of which preceding treatment with other antisyphilitics failed. The symptomatic results are very good; the influence on the Wassermann test is not stated.

W. J. Bais.

KIMBALL (O. P.). **The Prevention of Simple Goitre.**—*Public Health Rep.* 1923. Apr. 27. pp. 877–885. With 5 text figs.

Goitre may be fitly treated in this *Bulletin*, for it is common in the Himalayan and Sub-Himalayan districts and in the parts drained by the great Indian rivers (MCCARRISON), as well as in the western provinces of China, is very prevalent in a large district of the Middle Chari region (French Congo), occurs in the Ouelle and Katanga districts of Belgian Congo, and has been reported from Bali island (Dutch East Indies). Though iodine has been employed in its treatment since 1820, and the active principle of the thyroid was shown in 1895 to be a stable compound of iodine, it was not till 1916 that this compound was isolated (KENDALL). MARINE and LENHART have shown that iodine is necessary for normal thyroid function and that the iodine content varies inversely with the degree of hyperplasia, and by the administration of iodine they eradicated goitre from fisheries in Pennsylvania.

Thus the use of iodine as a preventive of goitre was put on a scientific basis. It is sufficient to give it to girls during adolescence and to women during pregnancy; the great majority of goitres in boys and men are congenital and due to insufficient thyroid function in the mother. In 1916–20 10,000 girls in the schools of Akron, Ohio, were examined and about half found to have goitre. About half of those examined received each 3 grains of sodium iodide in the drinking water once daily for two weeks each spring and autumn. The others declined. Of those receiving iodine none developed goitre but two who were in poor health: among the others 27·6 per cent. without goitre at the beginning became goitrous. Moreover in 60 per cent. of those who had it at the first and took iodine the goitre disappeared. The actual figures are given. Even more striking effects have been obtained in Swiss cantons, where a practically tasteless organic iodide has been used. Before treatment in January 1918 the incidence of goitre in all the school children of the Canton of St. Gall was 87·6 per cent.; in January 1922 it was 13·1 per cent. The greatest difficulty is the unpleasant taste of sodium iodide, and now in parts of the U.S.A. chocolate tablets are being employed. Similarly, iodine should be given to every woman in pregnancy.

In endemic goitre districts, therefore, iodine should be given to all girls between the ages of 11 and 16, and to all pregnant women. "Simple goitre is the easiest known disease to prevent."

A. G. B.

Dekester & Martin. **Le Goitre au Maroc. Spécialement dans la région de Fès. (2e Article.)**—*Maroc-Médical.* 1923. Apr. 15. No. 16. pp. 116–117. [2 refs.]

Between May 1920 and April 1923 the authors at the native hospital at Fez have seen 51 cases of goitre, 35 in women and 16 in men. The distribution is given as far as it could be ascertained. No case has been seen in animals. Exophthalmic goitre is quite exceptional.

A. G. B.

Le Dantec (A.). **Volumineux goitre parenchymateux. Thyroïdectomie. Guérison.**—*Bull. Soc. Path. Exot.* 1923. June 13. Vol. 16. No. 6. p. 429. With 1 plate.

The goitre, which was removed from a native girl at Dakar, weighed 1,400 gms.

A. G. B.

Schneider (Otto). **Der endemische Blasenstein in Siam.**—*Ztschr. f. Urol.* Leipzig. 1922. Vol. 16. No. 11. pp. 473–487. With 1 fig.

Stone in the bladder is frequent in the Menam valley, as it is in that of the Canton river and the Nile. The author discusses shortly its causes, the age distribution and diagnosis, and at length measures for its relief. Lithotomy is preferred to lithotrity on the grounds that the patients are of a slight build so that the usual instruments are too large ; nearly half are under the age of 15 ; they are country folk and desire speedy relief, and best of all to return in a fortnight with the stone in a handkerchief. Perineal section is done in not more than 3 per cent. of cases, in the rest the high operation. In case of evidence or suspicion of beriberi, malaria or yaws local anaesthesia is preferred to chloroform.

A. G. B.

Mendoza-Guazon (Maria Paz). [In English and Spanish.] **Calculi among Filipinos. Calculos entre los Filipinos.**—*Jl. Philippine Islands Med. Assoc.* 1923. July-Aug. Vol. 3. No. 4. In English pp. 169–193. [26 refs.] In Spanish pp. 209–219.

In his statistics of the mortality from biliary and urinary calculi Hoffmann states that Copenhagen and Manila have an excessive frequency of both conditions. The author examined the necropsy findings of the College of Medicine, University of the Philippines, from 1907 to 1923, comprising 8,649 records of Filipinos, 5,562 males and 3,087 females. Calculi in the biliary tract were found in 131 (75 males and 56 females), and in the urinary tract in 90 (71 males and 19 females). The net result is that lithiasis was found in 2·5 per cent. of Filipinos.

The author concludes that the incidence and mortality of cholelithiasis and urinary lithiasis in this series of cases is high, that both conditions are most frequent in the third decade, that the incidence of cholelithiasis in the sexes is 1·5 males to 1 female, that vesical calculus is very rare among Filipino women, that in a semi-tropical country the danger of cholelithiasis is increased by the migratory activities of ascarides, that ascarides may ascend the biliary tract

and either their eggs or the worms themselves become the nucleus on which bile pigments may be deposited, that the hypothesis that avitaminosis is the cause of either gall or urinary stones is not supported by this study, and that the large number of infections and carriers in the Philippines is one of the causes of the great incidence of cholelithiasis.

The paper contains much detailed information in the text and in tables which should be consulted by persons particularly interested in its subject.

A. G. B.

Gomez (Liborio) & Navarro (Regino). **Diphtheria Carriers and their Significance in the Philippines.**—*Philippine Jl. Sci.* 1923. June. Vol. 22. No. 6. pp. 559–566. [6 refs.]

In previous papers on diphtheria in the Philippines the authors have shown that the disease is rather infrequent, not epidemic, and with somewhat high mortality in spite of antitoxin treatment; the Schick reaction showed that 8·5 per cent., mostly young children, of 1,030 individuals tested were susceptible (this *Bulletin*, Vol. 17, p. 421; Vol. 20, p. 666). Here they study the carrier, for which purpose they cultured material from the throats of 1,775 healthy persons (1,222 children) and tested by animal inoculation the virulence of strains of diphtheria isolated. Virulence was attributed to strains which killed guineapigs in 4 days with the production of certain lesions. Details of the technique are given.

"Summary. 1. At least a certain percentage (2·08) of healthy individuals in the Philippine Islands harbour diphtheria bacilli in their throats.

"2. The diphtheria bacilli harboured in healthy persons have been found non-virulent in about 89 per cent., and virulent in about 11 per cent. of the carriers.

"3. In a school where two cases of clinical diphtheria developed, and where carriers of both non-virulent and virulent bacilli were found, the disease has not spread to the other children of the school, or to the other people with whom the carriers and cases came in daily intimate association, which confirms the notion that the disease does not become epidemic in Manila.

"4. In spite of the continuous existence of carriers of non-virulent bacilli and the occasional existence of virulent one in persons living in institutions where a certain number have been proved to be susceptible to the disease by Schick's test, no clinical diphtheria has ever been known to develop among the inmates.

"5. From the above data one must conclude that, for the control of diphtheria in the Philippines, it is only necessary to examine the throats of the individuals who have come in intimate contact with cases, to isolate those who are carriers, and to liberate them later if the animal tests show that the bacilli they harbour are not virulent."

A. G. B.

Vardon (A. C.). **Diphtheria Bacillus Carriers in a Mixed Indian Population.**—*Indian Jl. Med. Res.* 1923. Oct. Vol. 11. No. 2. pp. 611–620.

The Indians in question were visiting Kasauli for Pasteur treatment. A single nose and throat culture was made of each individual within

a day of arrival from the plains. A thousand cases were examined (810 male, 190 female), and 2,000 swabs; 49 cases, or 4·9 per cent., were morphologically positive, and 7 of those (all male) were found to be carriers of a virulent strain. These findings are analysed by age groups, occupation, provinces, throat condition and seasonal incidence. The technique is given and the sugar reactions described. All the 42 strains isolated were inoculated into guineapigs.

The conclusions are as follows.

"A fairly high percentage of Indians, roughly 5 per cent., harbour organisms in their nose and throat which are morphologically indistinguishable from *B. diphtheriae*.

"2. About one-seventh of these are carriers of virulent strains.

"3. A higher percentage (about three times as many) of carriers of all strains and particularly of virulent strains is to be found among those with pathological throats.

"4. In a search for carriers it is as important to take nasal swabs as throat swabs, since at certain periods positive results may be obtained more frequently from the nose than from the throat."

A. G. B.

PANAYOTATOU (Angélique G.). **Quelques mots sur l'affection diphtérique et surtout la diphtérie primitive du nez. 14 cas primitifs de diphtérie nasale prouvés par l'examen miscroscopique, et le traitement par le sérum spécifique.**—*Rev. Med. et Hyg. Trop.* 1923. July-Aug. Vol. 15. No. 4. pp. 121–134. [4 refs.]

An account of cases of nasal diphtheria in children at Alexandria. The author notes the mildness, the restriction to the nose, the absence of fever and swollen glands, and the small quantity of serum needed for cure [20–40 cc., number of units not stated.] This form of diphtheria and the uses of the Schick reaction are discussed in an interesting and lucid manner.

A. G. B.

FOX (E. C. R.), MCDONALD (E. J. C.) & YOUNG (T. C. McCombie). **The Schick Test and Immunisation by Toxin-Anti-Toxin in Assam.**—*Indian Med. Gaz.* 1923. Sept. Vol. 58. No. 9. pp. 419–422. [6 refs.]

At Shillong, a hill station, there are three schools for European children which receive boarders from all over India. In 1917 there was an outbreak of diphtheria at one of these schools with 40 cases, in 1918 16 cases, in 1919 and 1920 2 and 3, and in 1921 26, and the schools were emptying. In the Schick test, which is described, a negative reaction means that the subject has 1/30 of a unit of diphtheria antitoxin per cc. in his blood, which is sufficient to protect him; a positive reaction shows the subject to be susceptible. Toxin-antitoxin immunization consists in three injections at weekly intervals of 1 cc. of diphtheria toxin suitably neutralized with antitoxin.

It was decided to test all the children by Schick and to immunize those which gave a positive reaction. The first supply of toxin for the Schick test, procured from America, proved to be inert, but a later supply from the Wellcome Bureau Laboratory was potent, as was toxin-antitoxin received from America. The table shows the results of the Schick tests.

Showing the Results of the Tests in the Three Schools.

Name of School.	No. tested.	No. positive.	No. of pseudo-reactions.		No. doubtful.	Percentage positive.
			Positive.	Negative.		
St. Edmund's College	143	57	2	3	6	39·9
Pinemount School ..	49	21	0	0	2	42·8
Loretto Convent ..	79	47	2	5	6	59·5
Total	271	125	4	8	14	46·1

Of the 125 children found to be positive 121 were inoculated with toxin-antitoxin ; two months after the last injection 13 Schick positives were retested and gave a negative reaction. During the term which followed a case of diphtheria with virulent bacilli occurred in a Schick negative, bacilli persisting, but there was only one instance of spread, in a boarder who had been overlooked and had not been tested.

The authors conclude that the toxin for the Schick test and the toxin-antitoxin mixture can retain potency after a journey to India during the hot weather months and give useful results as elsewhere. All new pupils are now being tested and immunized.

A. G. B.

Brachio (J. J. A.). **Iodine in the Treatment of Malaria, Kala-Azar and Small-Pox.**—*Indian Med. Gaz.* 1923. July. Vol. 58. No. 7. pp. 311–313.

The author of this paper would appear, from his own account, to have found the panacea for all ills. Driven to the use of iodine as a result of shortage of other drugs, he found it served him " efficiently on several occasions in cholera, small-pox, influenza, intestinal colic, diarrhoea, dysentery and a host of other complaints. . . . . The results were most gratifying. And now in the Suri Jail quinine is a thing of the past, and iodine has practically taken the place of all other drugs for the treatment of fevers, bowel complaints and septic conditions." The action of iodine in malaria is equally miraculous, and the author gives his reasons for discontinuance of the unpleasant and expensive remedy quinine. Kala azar also is a disease which is now found to come under the influence of iodine, and the author hastens to lay before the profession a résumé of his experience and observations in the treatment of kala azar. A solution of

Iodum	...	...	...	...	6 grs.
Pot. iod.	...	...	...	...	6 grs.
Aqua distillata	...	...	...	...	1 oz.

is prepared. Forty minims of this solution, which contains half a grain of iodine, are injected every other day up to 5 injections and then 10 drops of tincture of iodine are given by the mouth three times a day during the course of one week. Nourishing food and tonics may be given to complete the recovery. The treatment appears to be simplicity itself, but the paper, unfortunately, does not give the evidence which is required to carry conviction.

C. M. Wenyon.

JEUDWINE (W. W.). **The Therapeutic Value of Intravenous Iodine. Based on Three Years' Experience on 400 Cases.**— *Indian Med. Gaz.* 1923. Dec. Vol. 58. No. 12. pp. 561–571.

The author finds that the introduction of iodine into the veins results in a general hyperleucocytosis, that chronic ulcers heal rapidly, incipient pulmonary tuberculosis is arrested and later cases benefited, cases of chronic bronchitis are much improved and corneal ulcers quickly cured. He uses 1 or 2 cc. of the tincture, diluted to 10 cc., as a single dose, or an equivalent quantity of a solution of iodine in potassium iodide, or Nesfield's water sterilizing tablets; in each case ½ to 1 grain of iodine. Very full details are given of the technique. A temperature reaction is to be welcomed. Iodism has occurred twice. The reports of cases occupy nearly 7 pages of small type. [See also this *Bulletin*, Vol. 18, pp. 281–2.]

A. G. B.

HILL (Owen A. R. Berkley). **A Plea for the Inception of a Mental Hygiene Movement in India.**— *Indian Med. Gaz.* 1923. June. Vol. 58. No. 6. pp. 242–244.

The author is of opinion that the substitution by the Indian Government of the expressive designation "Mental Hospital" for the term "lunatic asylum" implies the full recognition by official India of the value of psychiatry. It is said that psychiatry in India has been a neglected field; that in some of the largest and wealthiest towns in the land there is not a single specially qualified physician to whom a mental case can be referred for advice and treatment—and that nobody seems to care. The author recommends that each Presidency should now begin by engaging two or three such specially qualified physicians; that a psychopathic ward should be instituted in every hospital where students are trained; and that the special staff, besides working in co-operation with the local magistracy and with the Jail and Education Departments, should keep in close touch with philanthropic and missionary societies and should also endeavour to enlist the interest of the public by lectures, etc. Of course the objection will be raised that there is no money available, since the Indian Local Governments do not yet realise that "one mental disorder, namely dementia praecox, probably costs India more in maintaining its helpless victims for life than any other single disease."

A. A.

ENGELHARD (C. F.). **Het onderzoek naar geestesgesteldheid met behulp van platen, toegepast bij den Javaan.** [The Testing of the Mental Condition by Means of Pictures, applied to the Javanese.]— *Geneesk. Tijdschr. v. Nederl.-Indië.* 1923. Vol. 63. No. 5. pp. 734–750. [12 refs.]

The author's experiments with Javanese village people, not accustomed to see pictures, showed usually a child-like degree of intelligence in this respect. Comparatively, enumeration of the features of the pictures had the best results, description appeared more difficult, explanation of the meaning ranked still lower. This paper contains only the conclusions of experiments a full account of which is given in the author's graduation thesis.

W. J. Bais.

De Langen (C. D.) & Lichtenstein (A.). **Leukocytic Blood in the Tropics.**—*Meded. Burgerlijk. Geneesk. Dienst in Nederl.-Indië.* 1923. Part 3. pp. 293–298. [8 refs.]

The authors criticize the estimated number of leucocytes stereotyped in text-books of tropical medicine as being too low; it appears to have been adopted from an antiquated European formula. From their own observations in Java they conclude that in normal blood, in the tropics, the total number of leucocytes per cmm. is 8,000 to 9,000, having the following percentage composition: mast cells, 0·5; eosinophiles, 5·0; lymphocytes, 40·0; large mononuclears and transitionals, 3·5; neutrophile polynuclears, 51·0. These differ very little from recent European figures.

To give some necessary details of their work. They examined 98 healthy persons, 28 being European, 7 Chinese, and 63 natives of Java—all on an empty stomach; the differential counting was made obliquely across the whole breadth of the smear, and 400 leucocytes were counted in each case.

The absolute number of leucocytes was as follows:—

	Minimum.	Maximum.	Average.
28 Europeans	5,200 ..	9,900 ..	7,300
7 Chinese	6,100 ..	9,200 ..	8,000
63 Natives	4,900 ..	17,700 ..	9,300

The *percentages* of different kinds of leucocytes were as follows:—

	Minimum.	Maximum.	Average.
28 Europeans—			
Mast cells	0 ..	1·75 ..	0·5
Eosinophiles ..	1·25 ..	6·75 ..	3·15
Large mono. & trans.	0·75 ..	9·1 ..	3·5
Lympho	25·0 ..	58·5 ..	41·6
Neutroph. polyn. ..	32·75 ..	76·5 ..	51·0
72 (sic) Asiatics—			
Mast cells	0 ..	2·5 ..	0·5
Eosinophiles ..	0·5 ..	17·5 ..	5·9
Large mono. ..	1·0 ..	6·0 ..	3·2
Lympho.	18·0 ..	65·0 ..	38·6
Neutroph. polyn. ..	31·5 ..	73·0 ..	51·5

A. A.

De Langen (C. D.) & Djamil (Mohd.). **Idiopathic Hypereosinophilia.**—*Meded. Burgerlijk. Geneesk. Dienst in Nederl.-Indië.* 1923. Part 3. pp. 316–326.

A full and critical account of an enigmatical case in which the percentage of eosinophile leucocytes ranged between 75 and 85. Eosinophile leucocytes were also found in the sputum, in the pus of an experimentally produced abscess, and apparently in a piece of skin removed from the thigh.

The patient was a well-nourished Sundanese man of 30 years. He came complaining of lassitude and an attack of "tightness of the chest," and stated that such attacks, coming on in the evening, had been occurring for about 5 years—rarely at first, but every 2 months during the last year. Previous to these recurrent attacks "he had practically never been ill." He appears to have been most exhaustively and perspicaciously examined, and practically all that could be elicited, besides the extraordinary eosinophilia, were some chest sounds that might have justified the reasonable diagnosis of bronchial asthma, and a much-accented second

pulmonary heart sound. Naturally also, the suspicion of ankylostomiasis was followed up, although no eggs were found in the faeces; a specific treatment brought away 33 hookworms, but a second treatment produced nothing.

During the patient's stay in hospital the following observations are noted. The blood-count on two successive days shortly after admission gave the total number of leucocytes 12,400–13,200; percentages of eosinophiles, 75·0–85·0; of lymphocytes, 11·5–3·0; of "segmented nucleated," 5·0–8·0; of mononuclear and transitional 3·5–2·0; of basophiles, 0; of myelocytes and metamyelocytes, 0; of young myelocytes, 5·0–2·0. Haemoglobin, 80 per cent. Subsequently, the total number of leucocytes varied between 12,000 and 26,000, but the total number of eosinophile oscillated between the same values. In the majority of the eosinophiles the granules were remarkably small. The spleen gradually became enlarged; on admission it was not palpable; 3 months afterwards it was two-fingers below the costal arch, and firmly elastic to the touch.

Experimental observations during stay in hospital: Artificially-produced pyrexia caused a "fairly considerable" reduction in the number of eosinophiles for the time only. On a strict vegetarian diet the eosinophiles fell to 51 per cent.; with foods rich in purin the percentage rose to 85. The vago-neurosis theory of eosinophilia was considered, but the increase of uric acid in the urine though constant was very small. The suggested association between eosinophiles and Charcot-Leyden crystals was investigated with the result that by incubating the patient's blood, under strict asepsis and in anaerobic conditions, at 37° C. (with proper controls) Charcot-Leyden crystals were actually formed inside some eosinophile cells, within 24 hours.

After excluding all known causes of eosinophilia the authors have to fall back on a nominal diagnosis of idiopathic hypereosinophilia.

Searching the medical record they descry the following cases that agree with their own in certain essentials: (1) A case from New York reported in 1912 by STILLMAN as "Myeloid leukaemia with predominance of eosinophil cells"; in this the lymph-glands and the liver were enlarged, as well as the spleen, and there was some albumin and some casts in the urine. (2) A case of "Persistent eosinophilia, hyperleucocytosis and splenomegaly" reported by VAN GIFFEN, from the Mayo clinic in 1919; here also there was enlargement of lymph-glands. (3) A case by HUBERTIN and GIROUX in the *Presse Médicale* of 1921, where along with extraordinary eosinophilia and fluctuating leucocytosis the other salient phenomenon was cardiac insufficiency due to sclerosis of the pulmonary artery; here in the course of at least four years the spleen was but very slightly enlarged. (4) A case by MACDONALD and SHAW reported in the *British Medical Journal* of Nov. 18, 1922, under the title "Persistent Eosinophilia with Splenomegaly." (5) A case, from Edinburgh, of a girl of 12 years under treatment for digestive troubles, with a leucocytosis of 12,000 to 15,000 and an eosinophilia of 85 per cent.

A. A.

CHOPRA (R. N.) & MCVAIL (J. Borland). **Carbon Tetrachloride in Pharmacology and Therapeutics.**— *Indian Med. Gaz.* 1923. Oct. Vol. 58. No. 10. pp. 453–461. With 9 graphs. [11 refs.]

This investigation by a Professor of Pharmacology and the officer in charge of Hookworm Research at the Calcutta School of Tropical Medicine was prompted by the demonstrated value of carbontetrachloride in the treatment of hookworm combined with its cheapness. The available samples contained appreciable quantities of carbon

bisulphide and organic impurities; only samples which had been purified were used. The authors tested the action on protozoa, with negative results comparable with those of HOGUE and VAN WINKLE [this *Bulletin*, Vol. 20, p. 784], on the intestine and uterus of small animals with the drug administered by the mouth and by injection, and on the respiratory, circulatory, genito-urinary and central nervous symptoms of small animals. They studied its toxicity in dogs and made experiments on the action in vitro. Finally, they record their clinical observations. Their conclusions are as follows :—

"1. Carbon tetrachloride is the most efficient anthelmintic known for hookworm. It is of little value in *Ascaris* infections and of no value against *Taenia*.

"2. The toxic dose of 1 to 4 cc. per kilo body weight in our experiments is far in excess of the therapeutic total dose of 5 cc., *i.e.*, 0·13 cc. per kilo. which is given as an anthelmintic to a normal individual weighing 65 kilos.

"3. Owing to its low solubility and volatility and consequently slow rate of diffusion, only small quantities are absorbed into the circulation. Large quantities can therefore be introduced into the alimentary canal without untoward effects.

"4. When given in medicinal doses and with a purge to persons organically sound it is safe, provided that the drug is pure and that it is swallowed and does not enter the larynx. Carbon tetrachloride itself and its vapour are very irritating, and if brought into contact with the mucous membrane of the respiratory tract in any concentration may produce a reflex stoppage of respiration and later a stoppage of the heart and death. Therefore it must not be forced on struggling children.

"5. The great contra-indication is a liver with impaired function as is caused by alcoholism, chronic or acute. The liver appears to retain a large proportion of the small quantity which is absorbed and so protects the vital organs from injury. The presence of heavy round-worm infection may also be a contra-indication.

"6. Large and toxic doses of this drug, whether single or divided, have a damaging effect on the liver parenchyma. With therapeutic doses the damage, if any, is temporary and unimportant.

"7. The action of the drug on voluntary and involuntary muscle is depressant. In medicinal doses it is slightly laxative and it has no abortifacient tendencies."

They treated 230 cases in hospital and obtained the best results by giving to adults on two successive days a dose of 70 minims in water accompanied by one ounce of concentrated solution of magnesium sulphate, with foodless periods of 2½ hours before and 3 after. Thus were removed 98·8 per cent. of necators and 87·8 per cent. of ankylostomes. Neither by the urobilin test nor the laevulose tolerance test could they detect any damage to the liver. Many of their cases were complicated by kala azar.

A. G. B.

LAMSON (Paul D.), GARDNER (George H.), GUSTAFSON (R. K.), MAIRE (E. D.), MCLEAN (A. J.) & WELLS (H. S.). **The Pharmacology and Toxicology of Carbon Tetrachloride.**—*Jl. of Pharm. & Experim. Therap.* 1923. Nov. Vol. 22. No. 4. pp. 215–288. With 32 figs. [20 refs.]

The research here recorded in full detail was done at the Pharmacological Laboratory of the Johns Hopkins University at the request of the International Health Board. The authors find that pure carbon tetrachloride is a highly toxic substance but that its toxicity depends

greatly upon the mode of administration and the species of animal. Autopsies of 200 animals showed that the liver is the organ chiefly affected. No other lesions of consequence have been noticed.

Some of the conclusions are as follows :—

" 5. Pure carbon tetrachloride has been found to be relatively non-toxic for dogs when given in *single* doses by mouth, even up to 25 mils/kilo (500 times the therapeutic dose). . .

" 6. Repeated doses of 25 cc. per kilo (as much as 220 cc. daily) have been given to dogs over several days. As much as 2 litres have been given before severe symptoms occurred in 1 animal.

" 7. Carbon tetrachloride may be considered an extremely safe anthelmintic for dogs if given in single therapeutic doses by mouth with proper precautions.

" 8. We have confirmed the findings of Hall and Shillinger that carbon tetrachloride is very toxic to rabbits when given by mouth, death occurring after 4 cc. per kilo.

" 9. The difference in toxicity of carbon tetrachloride for dogs and rabbits may be due to a difference in degree of absorption from the intestinal tract, as both species of animals are equally susceptible to the drug administered by inhalation.

" 10. From the great difference in toxicity of pure carbon tetrachloride in dogs and rabbits it is evident that it is unsafe to infer from experiments on any one species of animals the toxicity for another, as for example, the toxicity in man from these experiments on dogs.

" 11. The administration of carbon tetrachloride by mouth after giving digestible fatty substances, such as olive oil or cream, increases the degree of intoxication as shown by signs and symptoms, van den Bergh's bilirubinemia test, pathological findings, and the phenoltetrachlorphthalein liver function test.

" 12. The administration of alcohol together with carbon tetrachloride by mouth increases the degree of toxicity of carbon tetrachloride enormously, death occurring in many animals, and all the symptoms of intoxication as jaundice, bilirubinemia, bilirubinuria, vomiting and depression, as well as pathological findings and liver function changes, being markedly increased.

" 13. Puppies were found to be much more susceptible to carbon tetrachloride than full-grown dogs . . . . . .

" 17. Intravenous injections of carbon tetrachloride into a branch of the vena cava without anesthesia cause characteristic severe nervous symptoms and temporary loss of consciousness with rapid and complete recovery.

" 18. Intravenous injection of the same amount of carbon tetrachloride into a branch of the portal vein (aseptically) causes great depression, vomiting, diarrhoea, jaundice, bilirubinemia, bilirubinuria and usually death.

" 19. Intravenous injections into a branch of the vena cava under ether show instant stoppage of respiration followed immediately by an intense fall of blood pressure. The respiration returns quickly to normal while the blood pressure remains low for a long time, gradually returning to normal.

" 20. Injection of the same amount of carbon tetrachloride into the portal vein under ether may show no effect on the blood pressure or respiration, although with rapid injection a fall in blood pressure can be obtained. . . . . .

" 22. From these experiments on the effect of the path of absorption one might explain the differences in symptoms seen in clinical cases, as well as in our toxicity experiments. 1. Inhalation would cause nervous symptoms, possible death from respiratory or cardiac failure, or rapid and complete recovery. 2. (*a*) Absorption from the intestinal tract if by the portal system would cause signs of severe liver damage, jaundice, bilirubinemia, vomiting, depression and death after a few days. (*b*) Ab-

sorption from the intestinal tract if *via* the lymphatics and thoracic duct might cause nervous symptoms, much less liver damage, and recovery as was seen after the administration of carbon tetrachloride and fatty substances. . . . . .

"25. Subcutaneous injection causes local irritation with sterile abscess formation. . . . . .

"29. In the 200 dogs autopsied no worms were found in the intestines of dogs having received carbon tetrachloride by mouth, in doses above 0·05 mil/kilo, while many were found in the untreated animals."

A. G. B.

BOECKER (Eduard). **Ueber die Verteilung des Chinins nach Verabfolgung per os.** [The Distribution of Quinine after Ingestion.]—*Arch. f. Experim. Path. u. Pharm.* 1923. Vol. 99. No. 3/4. pp. 200–205. [5 refs.]

The author refers to some former observations on the remarkable degree of absorption by the lungs (proportionately to absorption by the liver) of quinine, eucupin, and optochin when these drugs are administered to guineapigs subcutaneously. He now records confirmatory results for quinine given to guineapigs *per os* : the proportion taken by the lungs is much greater than by the liver and increases with lapse of time after administration of the dose. He alludes to the value of these observations in application to treatment of pneumonia.

A. A.

LOUIS & TRABAUD. **Polynévrite émétinique.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1923. Aug. 2. 3rd Ser. Year 39. Vol. 47. No. 27. pp. 1273–1275.

The patient was admitted to hospital at Beyrouth on April 13 with dysentery, attended at first by a flux of leucocytes and no amoebae, for which antidysenteric serum and frequent doses of sulphate of soda were given, till April 27, when the character of the stools had changed and amoebae were detected. Small doses of sulphate of soda were continued, and between May 5th and 25th 7 intravenous injections of emetine were given, 0·08 gm. in each, 0·56 gm. in all. The patient then complained of pain in the left buttock and sacral region and kept his bed. On the 25th there was pain in all the left lower limb, increased when the muscles were compressed, and the left buttock was flattened. The sciatic nerve was painful to pressure throughout its course. No change in tactile or thermal sensibility. With electrical treatment in 45 days recovery was complete. Emetine was not found in the cerebrospinal fluid or urine.

The authors cite a case in which similar symptoms came on after a total of 0·24 gm. and remark that emetine poisoning is not merely a matter of dosage. Amoebiasis in Syria, according to them, differs from the disease in North Africa ; in Syria liver abscess is rare but amoebic dysentery is very resistant to emetine and the arsenobenzenes, and has a special tendency to relapse, so that for the doctor there is the dilemma of overdose of emetine or failure to cure. They think that emetine does not affect all nerve fibres without discrimination ; those are affected by preference which conduct sensibility to pain ; suggesting that the toxic action is mainly on the posterior roots.

A. G. B.

VOEGTLIN (Carl), DYER (Helen A.) & LEONARD (C.S.). **On the Mechanism of the Action of Arsenic upon Protoplasm.**—*Public Health Rep.* 1923. Aug. 17. Vol. 38. No. 33. pp. 1882–1912. With 8 charts. [15 refs.]

The authors remind us that EHRLICH has used his side-chain theory to explain the chemotherapeutic action of arsenic, his assumption being that trivalent arsenic is firmly and fatally fixed to a definite chemical component of protoplasm—a hypothetical "arseno-ceptor." They also remind us that Voegtlin and SMITH concluded from experiment that arsenic can exert a direct toxic effect only if present in the form of an aromatic arsenious oxide. Their present argument is that if EHRLICH's assumption be correct it should be possible to inhibit—temporarily, at least—the toxic action of arsenic by supplying the animal cell with an extra provision of the particular constituent of protoplasm that may be supposed to react with arsenic.

As to what this particular constituent of protoplasm may be, the authors have thought it reasonable to assume, from the ease with which aromatic arsenious oxides, including arsenoxide, react with hydrogen sulphide, that it might be something that contained sulphur. Such a substance is glutathione—isolated by Gowland HOPKINS from yeast and from mammalian tissues—a sulphydryl compound.

The authors have therefore carried out a series of experiments with various sulphydryl compounds to test the presumed inhibitive effect of these upon arsenious oxide—a substance which they have shown to be extremely toxic to trypanosomes and to have a great affinity for the tissues of the rat, these being the animals used in their experiments. It is as much beyond the scope of this *Bulletin* as beyond the competence of the reviewer to follow the formal chemical expression of these experiments and their control observations; it must be sufficient to state the authors' conclusion that they "clearly indicate that certain SH compounds are able to counteract the toxic effect produced by arsenoxide on trypanosomes [in vitro, and in the circulating blood] and a representative mammal [rat]; and that they suggest—"in view of the fact that SH compounds appear to occur as normal protoplasmic constituents of all living cells with an active metabolism"—that arsenic in the form of aromatic arsenious oxides may be regarded as a specific poison affecting these particular constituents, and a specific poison that might be counteracted by reinforcing the SH compounds.

A. A.

BROOKS (Matilda Moldenhauer). **Studies on the Permeability of Living and Dead Cells. IV. The Penetration of Trivalent and Pentavalent Arsenic into Living and Dead Cells.**—*Public Health Rep.* 1923. Dec. 14. Vol. 38. No. 50. pp. 2951–2966. With 7 charts in text. [13 refs.]

In investigating experimentally the penetration of arsenic into living (and dead) cells the marine unicellular alga, Valonia, was used, as affording a large succulent cell of which the three components—wall, lining protoplasm, sap—could easily be dissociated and analysed separately. The arsenic compounds were dissolved in distilled water and the solution was then added to the seawater containing the plants. The pH concentration was varied in two ways, by using phosphate buffers and by adding traces of HCl; the use of phosphate buffers may lead to deceptive results and must be "controlled." The presence of

arsenic was determined by the Gutzeit method. The following is a summary of essential results :—

" By far the highest concentration of arsenic was found in the protoplasm The great amount of arsenic taken up by the protoplasm points to a combination of arsenic with protoplasm.

" The penetration of both pentavalent arsenic (in the form of As_2O_5 and atoxyl) and trivalent arsenic (As_2O_3) is least when the external solution is nearly neutral. As the H ion concentration of the suspension fluid diverges from neutrality, more arsenic enters, the amount increasing as the surrounding medium becomes either more acid or alkaline. This is true of sap and protoplasm, but not of wall.

" Trivalent arsenic does not penetrate so readily into protoplasm in the acid range as pentavalent arsenic ; but it passes into the sap more readily, except in the range of neutrality.

" Previous exposure of *Valonia* for one hour in a solution of $NaHCO_3$ in sea water increases the accumulation of pentavalent arsenic in the protoplasm by 150 per cent. ; whereas the amount of trivalent arsenic accumulation in the protoplasm is reduced by 25 per cent. Under the same conditions the entrance of trivalent arsenic from the protoplasm into the sap is increased about 100 per cent., whereas that of pentavalent arsenic is increased only about 25 per cent.

" It is suggested that either the bicarbonate ion or the presence of abnormal amounts of free CO_2 increases the permeability of the cell to arsenic."

As regards dead Valonia, the penetration of arsenic from a solution in sea water (in a pH3.6 medium) was found to be much more rapid than in the case of the living cell.

A. A.

Aiazzi-Mancini (Mario). **Sopra uno strano caso do avvelenamento collettivo da stramonio.** [An Unusual Instance of Collective Poisoning by Stramonium.]—*Giorn. di Clin. Med.* Parma. 1923. Dec. 30. Vol. 4. No. 18. pp. 696–698. With 1 fig.

A gentleman of Florence imported in the summer of 1922 seeds of " giant spinach " and sowed them in his garden. There was abundant growth and in the following June some was cooked for the table. Owing to its bitter taste very little was eaten, but all of the family, three in number, were poisoned, one seriously. The symptoms are described briefly with the exception of the peculiar delirium associated with some members of the Solanaceae, which in the case of one patient is described in detail. The plant proved to be *Datura stramonium* and the cases are recorded, not on account of the symptoms, which were not unusual, but in order to sound a note of warning as to the dangers arising from the unwitting use of this plant for food.

H. Harold Scott.

Niccolini (P. M.). **Sopra un caso di avvelenamento da " Nerium oleander."** [A Case of Poisoning by *Nerium Oleander.*]—*Giorn. di Clin. Med.* Parma. 1923. Dec. 30. Vol. 4. No. 18. pp. 691–695. With 5 charts in text.

A case of attempted suicide in Florence by *Nerium oleander*. The patient, a woman of 25 years of age, prepared a decoction of the tops and leaves and swallowed an undetermined quantity. An hour and a half later symptoms set in with violent vomiting and circulatory depression ; the pulse was small, 38 per minute. The stomach was

washed out with a solution of tannin and camphor was injected subcutaneously. Vomiting continued for about 10 hours, with diarrhoea. The pulse became very irregular and the beats unequal, but the rate by this time had increased to 60 per minute. The arhythmia and inequality continued for some 24 hours and vague bruits were audible over the cardiac area. Recovery was complete in 3 days.

The poison in its action thus resembles digitalis. [It is noteworthy that there were no convulsions such as occur with *N. odorum*, a closely allied species, which accounts for a considerable number of cases of poisoning in India. This symptom is ascribed to the Karabin present.] A table is given showing the principles extracted from both these plants with their chemical nature and characters. Medicinally, *N. oleander* is used internally as an infusion in a strength of 2·5–5 per cent., or as an extract, for its action as a cardiac tonic and diuretic, and externally as a parasiticide. It is popularly regarded as an abortifacient, as is the *N. odorum* in India, but on insufficient grounds.

H. Harold Scott.

LECLERC (Henri). **Les plantes médicinales des colonies françaises : Le Yohimbe.**—*Presse Méd.* 1923. Sept. 5. Vol. 31. No. 71. (Supplement.) pp. 1486–1488. [9 refs.]

Yohimbe is the bark, much resembling in appearance some kinds of cinchona-bark, of three tropical African species of Rubiaceae, namely *Corynanthe* (or *Pausinystalia*) *yohimbea*, *C. paniculata*, and *P. trillesii*. The decoction has the reputation, among the natives, not only of resuscitating erotic desire but also of insuring very potent performance. It yields an alkaloid, yohimbine, which in the laboratory, in small doses, has been observed to have a rapid and direct specific effect on the erector centre of the male, and in the female to stimulate the ovaries, the uterine mucosa, and the milk-glands. Poisonous doses paralyse the motor centres generally (not affecting the muscles or the motor nerves) and eventually cause death by paralysis of the respiratory mechanism and of the motor ganglia of the heart. Yohimbine has a local anaesthetic effect like cocaine, but as it also causes local hyperaemia its use in this direction is interdicted. The hydrochloride has been used therapeutically in daily doses of 0·015 gm., which may be increased, but cautiously, since, although it has no effect on kidney or other organs, it may cause salivation, gingivitis, haemorrhoidal and urethral irritation, and also pains and cramps. The author records a case of exasperating marital incapacity, following the sealing of a prolonged Platonic attachment, which was completely rectified by a short course of coffee-spoon doses of fluid extract of yohimba bark in a 10 per cent. dilution, after failure of therapeutic doses of the hydrochloride.

A. A.

LECLERC (Henri). **Les plantes médicinales des colonies françaises : L'Iboga.**—*Presse Méd.* 1923. Aug. 15. Vol. 31. No. 65. (Supplemént.) pp. 1360–1361. With 1 fig. [6 refs.]

Iboga is a native name of *Taberne iboga*, an Apocynaceous shrub which is found on the African coast near the equator, and in French and Belgian Congo, and is used by the natives to stave off fatigue and

in sleeping sickness. It contains an alkaloid known as *ibogaine*, first studied by French observers in 1901. An account is given of the effects of this alkaloid on animals and man. It appears to share some of the properties of cocaine.

A. G. B.

HEFFERMAN (L.W.). **Stab Wound of Enlarged Spleen.**—*Indian Med. Gaz.* 1923. July. Vol. 58. No. 7. pp. 315–316.

The patient was a Chinaman of 35 years. Before despatch to hospital the external wound was dressed and a dose of morphia was administered. On admission the general condition was good. On opening the abdomen for examination a gush of blood carried some coils of gut with it and caused collapse, which was quickly rectified by injection of two pints of saline, one intravenously, the other into the peritoneal cavity. The wounded spleen was found to be much enlarged; there was also a tear and a small haematoma in the omentum. After ligation of the splenic artery and separate ligation of the pedicle the spleen was removed. The wound in the abdomen was then closed and a fresh suprapubic puncture made for a draining-tube. The wound healed by first intention and the patient made a good recovery, being discharged at his own request on the 20th day. The spleen weighed 5½ lbs.

A. A.

CADBURY (W.W.). **Blood Pressure of Normal Cantonese Students.**—*China Med. Jl.* 1923. Sept. & Oct. Vol. 37. Nos. 9 & 10. pp. 715–726; 823–833. [36 refs.]

The author discusses, to begin with, from the historic standpoint, the general subject of blood-pressure and the circumstances that influence it, and then the various recorded observations of the blood-pressure of non-European races in Bengal, the Philippines, North America and Japan. His own investigations, here tabulated, were made on 774 healthy students of the Canton Christian College, and he remarks that the Cantonese, though shorter and lighter than natives of other parts of China, are noted for energy and enterprise. In his observations he used a Nicholson sphygmomanometer, using the auscultatory method, with the subject sitting and resting the arm. His observations show that the systolic blood-pressure of these Chinese averages from 20 to 30 mm.Hg less than the European normal, and the diastolic pressure 10 to 20 mm. less, but that their average pulse-pressure shows less difference from the normal.

A. A.

i. DA COSTA (A. F. W.). **A Case of Infantile Biliary Cirrhosis.**—*Indian Med. Gaz.* 1923. Dec. Vol. 58. No. 12. pp. 587–588.

ii. MENSE (Carl). **Beobachtungen ueber die Seekrankheit.** [Observations on Sea-Sickness.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1923. July. Vol. 27. No. 6. pp. 193–197.

iii. RAMSAY (G. C.). **An Unusually Large Supraclavicular Lipoma.**—*Indian Med. Gaz.* 1923. July. Vol. 58. No. 7. p. 316. With 1 fig.

iv. TISNÈS (Léon). **La mutuelle F.A.O.**—*Congrès de la Sante Publique et de la Prévoyance Sociale, Marseille,* 11–17 *Septembre* 1922. *Comptes Rendus.* pp. 451–458.

i. A Hindu child of 13 months took ill in April with fever and loss of weight. A few days before death in August the liver was enlarged five fingers breadth below the costal arch and the spleen to an unstated degree. No record of any microscopic examination.

ii. A general discussion of the subject. The author recommends the use of Afenil, a compound of urea and calcium chloride.

iii. The patient was an old coolie woman, and the tumour, which weighed four pounds and was said to have been growing for 12 years, appears from the photograph to have been considerably bigger than her head. The tumour was inconvenient, not painful, and the wound of removal healed by first intention within ten days.

iv. An article dealing with the insurance of non-official Europeans in French colonies.

A. G. B.

Fleming (Wm. D.). [In English & Spanish.] **Some Aspects of Basal Metabolism with Special Reference to the Problems of Tropical Medicine. Algunos aspectos del metabolismo basal con referencia especial a los problemas de medicina tropical.**—*Jl. Philippine Islands Med. Assoc.* 1923. Nov.–Dec. Vol. 3. No. 6. In English pp. 308–311. In Spanish pp. 353–357.

Leipoldt (C. Louis). **A Note on Cancer among Natives.**—*Med. Jl. S. Africa.* 1924. Feb. Vol. 19. No. 7. pp. 206–207.

Phipson (E. S.). **Observations on an Outbreak of Diphtheria at Bishop Cotton's School, Simla.**—*Indian Med. Gaz.* 1923. Sept. Vol. 58. No. 9. pp. 417–419. [1 ref.]

Refers to the epidemic described by Sumner [see this *Bulletin*, Vol. 20, p. 667].

Reenstierna (J.). **Recherches sur le bacille de Ducrey. I. Préparation et propriétés d'un sérum antistreptobacillaire. II. Cutiréaction dans le chancre mou.—Son application au diagnostic.**—*Arch. Inst. Pasteur de Tunis.* 1923. Dec. Vol. 12. Nos. 3/4. pp. 273–312. With 4 plates. [57 refs.]

Ross (Ronald). **The Management of Medical Research.**—*Glasgow Med. Jl.* 1923. Nov. Vol. 100. New Series. Vol. 18. No. 5. pp. 209–223.

REVIEWS AND NOTICES.

FLETCHER (William) [M.D.Camb., Bacteriologist, Inst. Med. Res.] & JEPPS (Margaret W.) [Protozoologist, Inst. Med. Res., Kuala Lumpur] with a Preface by HORN (A. E.), [C.M.G., Med. Secretary, Colonial Advisory Medical & Sanitary Committee.] **Dysentery in the Federated Malay States.**—*Studies from the Institute for Medical Research, Kuala Lumpur, F.M.S.* No. 19. pp. viii + 82. With 44 figs. 1924. London: John Bale, Sons & Danielsson, Ltd., 83–91, Great Titchfield Street, W.1. [Price 10s. 6d. net.]

This work might almost serve as a pattern of what a monograph should be when dealing with such a subject as dysentery occurring in a restricted locality. The conclusions arrived at are set forth clearly and convincingly, and at the same time so modestly that it is only on reflection that the reader realizes the vast amount of work that was necessary before so definite an end could be reached. The whole letterpress is condensed into some 80 pages, the remainder being occupied by forty-four figures which show, as clearly as is possible in black and white reproductions, the type of patient dealt with and the conditions of the intestine found *postmortem*.

The authors, having shown that the vast majority of the cases investigated occurred in pauper coolies, point out that the high death rate is largely due to insufficient diet and inter-current disease.

Passing on to the cause of the dysentery, *E. histolytica* was found in 20 per cent., *B. dysenteriae*, Flexner, in 55 per cent., and *B. dysenteriae*, Shiga, in 3 per cent. The mortality being 20, 30, and 55 per cent. respectively.

In the investigation of these different causative agents, *B. dysenteriae*, Shiga, was found as the cause either of small epidemics or of isolated cases in hospital patients, about half of the latter having the disease in a chronic form. *B. dysenteriae*, Flexner, is far the commonest type of organism met with, and all the serological types described by ANDREWES were found, and in addition another variant related to the Flexner group serologically, which however failed to ferment mannitol.

Amoebic dysentery is much less common than bacillary forms, and no less than 13 per cent. of patients, in whose faeces active forms of *E. histolytica* were recognised, were also found to harbour one or other variety of the dysentery bacilli.

The next subject dealt with is the all important question of carriers, a condition which from the careful study of the abundant *postmortem* material available was conclusively shown to be due to infection of the intestinal mucous membrane and not, as in typhoid fever or cholera, to gall bladder infection. The chief situations where the bacilli were found in such cases being (*a*) in the contents of retention cysts; (*b*) in collections of pus situated beneath thin pigmented scars; (*c*) beneath the edges of chronic ulcers.

Other points dealt with are the importance of cytological diagnosis as a guide to treatment. The importance of employing fresh specimens of faeces for such examinations and for the isolation of the bacilli or the recognition of the *E. histolytica* is fully discussed. As regards the isolation of the bacilli, Teague and Clurman's method of mixing the faeces with a solution of glycerine in salt solution was found to be of considerable value. Various forms of treatment are then discussed, and even when the results were shown to be almost perfect as regards the healing of the dysenteric ulceration, as in the case of the amoebic form treated with emetine, the ultimate result is frequently unsatisfactory, the patients being too weak and emaciated to recover.

This is only a very brief summary of the points investigated, and careful study of the monograph will well repay all workers on this subject.

S. R. Douglas.

DE LANGEN (C. D.) & LICHTENSTEIN (A.).—**Leerboek der Tropische Geneeskunde.** [Manual of Tropical Medicine.]—pp. xiii + 564. With 22 plates (5 coloured), and 10 figs. [no date.] Weltevreden—Batavia—Leiden. G. Kolff & Co. [Price fl. 12·50.]

This book is evidently meant for local use. It is written in Dutch and so its foreign circulation will necessarily be limited. Still it may prove useful to clinicians of other tropical countries who may wish to become acquainted with the local Malay characteristics of various tropical diseases, seeing that the writers are known to possess a large clinical experience, which is collected in this book and is a sufficient guarantee of its merits. As is well known, the Malay Archipelago offers a highly monotonous nosographical aspect, such interesting diseases as trypanosomiasis, leishmaniasis, recurrent fever, etc., being absent (as autochthonous products). These subjects have therefore been treated succinctly. But the authors have been free to enlarge on indigenous diseases like malaria, yaws, dengue and allied fevers, various forms of dysenteries, sprue, cholera, ankylostomiasis and beriberi, where their ripe knowledge is of avail. Some shorter notes on ubiquitous diseases and on nervous diseases in the Malay Archipelago close this valuable book.

N. H. Swellengrebel.